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And *The Nation's Health*

Volume XX — July 1930 — Number 7

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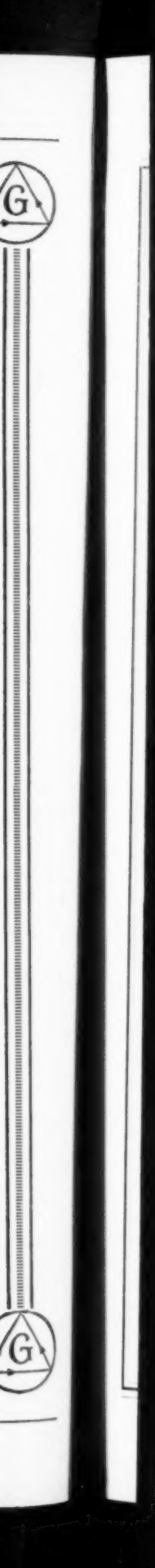

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American Journal of Public Health
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Official Monthly Publication of the American Public Health Association

Volume XX — July, 1930 — Number 7

CONTENTS

PAGE

Health Aspects of a Summer Recreation 697
Charles F. Dalton, M.D.

Technical Supervision in the Production of Highest Quality Milk 705
John G. Hardenbergh, V.M.D.

What Is a Preventorium? 715
H. E. Kleinschmidt, M.D.

Care of Communicable Diseases in General Hospitals 722
James Wallace, M.D.

Administration of Swimming Pool Standards in Detroit 727
William H. Cary, Jr.

What Preparation Should the Public Health Nurse Have for Rural Work? 734
I. Malinde Havey, R.N.

Bacteriological Control in Commercial Canning 741
E. J. Cameron, Ph.D., and H. M. Loomis

The Well Baby Clinic at the Office of the Family Physician and Pediatrician 747
E. J. Huenekens, M.D.

Waterways Pollution 751
Report of the Committee

EDITORIAL SECTION

Psittacosis 756

What is the Saturation Point for City Noise? 758

Congress Authorizes National Institute of Health . . . 760

Contents of previous issues of the American Journal of Public Health and The Nation's Health can be found by consulting the Readers' Guide in your library.

Published by the American Public Health Association, Prince and Lemon Sts., Lancaster, Pa., and 370 Seventh Avenue, New York, N. Y.

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Address correspondence regarding editorial contents and manuscripts to the Editor in Chief, M. P. Ravenel, M.D., University of Missouri, Columbia, Mo.

Address correspondence regarding subscriptions, advertising, reprints, etc., to Homer N. Calver, Executive Secretary, American Public Health Association, 370 Seventh Avenue, New York, N. Y.

Entered as second class matter January 25, 1928, at the post office at Lancaster, Pa., under the Act of March 3, 1879.

Continued on page vi

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PAGE

ASSOCIATION NEWS

A Nine-day All-expense Tour, with 5 Days in Mexico City 761

Other Meetings in Fort Worth 764

Dr. Slemons Michigan's New Commissioner of Health 765

Death of Samuel M. Heulings 765

German Hygiene Museum 765

Western Branch, A. P. H. A. 766

New Members 767

Public Health Administration—*Henry F. Vaughan, D.P.H.* 769
Providence, R. I., Survey. Municipal Expenditures for Public Health. Rural Health Service.

Laboratory—*C. C. Young, D.P.H.* 771
Description of a New Mechanical Disintegrator—*E. W. Schultz, M.D., and F. D. Banham*
Electric Kjeldahl Nitrogen without Fume Hood—*W. D. Stovall, M.D., and M. Starr Nichols, Ph.D.*

Vital Statistics—*Louis I. Dublin, Ph.D.* 774
Vital Statistics for England and Wales, 1929. Vital Statistics for Scotland, 1929. Vital Statistics for Irish Free State, 1929. Age-Sex-Seasonal Incidence of Certain Diseases in Children. The Homicide Record for 1929. Insured of Metropolitan Life Insurance Company.

Public Health Engineering—*Arthur P. Miller, C.E.* 777
Bacteria of the Coli Group in the Intestines of Birds and Their Importance in the Fecal Pollution of Water. Successive Separation in Sewage Disposal Systems. Activated Sludge Process for Sewage Disposal. Power Gas from Sewage Sludge. Studies on Yellow Fever in South America. Enumeration of the Anaerobic Sulphite Reducing Bacteria and the Significance of Their Presence in Water. A Study of the Possibilities of Transmitting Yellow Fever by Means of Stegomyia Excreta.

Industrial Hygiene—*Emery R. Hayhurst, M.D., and Leonard Greenburg, Ph.D.* 780
Toxicity of Dichloro-Difluoro Methane: A New Refrigerant. Warning Agents for Methyl Chloride in Refrigeration Systems. Observations on the Possibility of Methyl Chloride Poisoning by Ingestion with Food and Water. Titanium Oxide Pigments. Causes of Death by Occupation. An Experimental Study of Abnormalities Produced in the Organism by Electricity. Proceedings of the Twenty-fifth Anniversary Conference of the National Child Labor Committee held in New York City, December 16–17, 1929. Control of the Silicosis Hazard in the Hard Rock Industries. Occupation and Health. The Comparative Action of 5 and 10 per cent Carbon Dioxide Mixtures as Respiratory Stimulants in Carbon Monoxide Poisoning. The Quantitative Measurement of Human Efficiency under Factory Conditions.

Food, Drugs and Nutrition—*Walter S. Frisbie* 785
On the Nature and Rôle of the Fatty Acids Essential in Nutrition. Effect of the Varying Amounts of Menhaden Oil in the Diet on the Composition of the Body Fat of the White Rat. Studies of Vitamin C in Fresh and Canned Tomatoes. Further Evidence for a Third Accessory "B" Factor. Heat Resistance of the Spores of Clostridium Botulinum.

Continued on page viii

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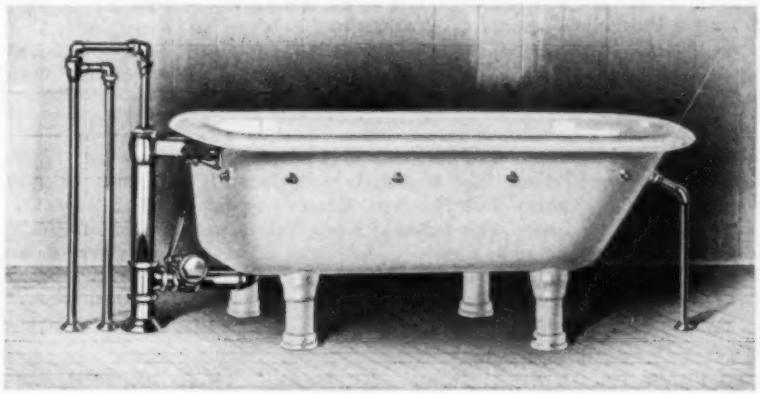

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Contents—Continued

PAGE

Public Health Nursing—*Eva F. MacDougall, R.N.* 788
The Public Health Nurse and Communicable Disease. Public Health Nurses in Michigan, 1929–1930. The Staff Education Plan in Montreal. We Need a Higher Standard of Admission to Nursing Schools.

Education and Publicity—*Evart G. Routzahn* 791
A Neighborhood Demonstration. Welcome to a Guest Editor. Early Diagnosis Campaign. Health Education in a Professional Magazine. Why Not the Silent Film? Publicity Task of Mental Hygiene. Magazine Articles.

Books and Reports 795
The Story of San Michele. The Diagnosis of Health. What is Eugenics? Shattering Health Superstitions. The Immunology of Parasitic Infections. Factors in the Sex Life of Twenty-Two Hundred Women. Sewerage and Sewage Disposal. Through the States with a Seeing Eye. Values and Methods in Health Education. Gewinnung und Kontrolle der Trinkmilch. The Hygiene of the School Child. A Handbook of the Mosquitoes of North America. Health Heroes—Edward Livingston Trudeau. The Biological Basis of Human Nature. A Textbook of Physiology for Nurses. The Health Care of the Baby. A Health Revue.

A Selected Public Health Bibliography—*Raymond S. Patterson, Ph.D.* . . 804

Health Department and Other Reports—*Ira V. Hiscock* 806
Sweden—Report of Official Committee on Maternity Welfare Work. Let There Be Sight. Lincoln, Neb. Colorado Springs, Colo. Ottawa, Can. Greenwich, Conn. New Jersey Sanatoriums. Detroit, Mich. Newport, R. I.

Books Received 810

News from the Field 811

Conferences 814

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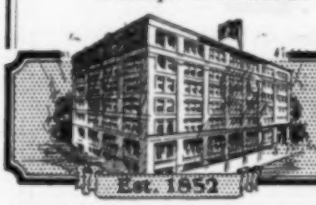

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American Journal of Public Health
and THE NATION'S HEALTH Vol. XII No. 7

Volume XX July, 1930 Number 7

Health Aspects of Summer Recreation*

CHARLES F. DALTON, M. D., F. A. P. H. A.

Secretary Vermont Department of Public Health, Burlington, Vt.

THE word "vacation" probably has as many varieties of meaning as there are persons who use it. To some it means two weeks of strenuous work and to others two weeks of doing nothing, with all kinds of variations between these extremes. And this is rightly so on account of the different occupations and different needs of the vacationists. The problem which must confront the individual is the choice of the proper kind of vacation to suit his needs. The problem of the state is to safeguard the places to which the vacationist goes.

THE PROBLEM OF THE INDIVIDUAL

Most people look upon summer vacation as a change from their usual occupation, and some take the need of change so seriously that they overdo the matter and return to their homes not only not refreshed but actually sick. Unfortunately there are no standards by which one can be guided in making suggestions for the use of one's spare time in summer, but a few generalizations may be put down as bearing on the subject. To my mind the case should be governed by common sense, even though the enjoyment may be somewhat curtailed. The health aspect of summer recreation should be the first consideration of the individual in his decision, for here the state cannot help him.

For the sedentary worker who gets little physical exercise in his daily occupation, a sudden round of active tennis, golf, mountain climbing or water sports may be disastrous. On the other hand, a complete change from an active manual employment to a life of sleeping half a day and spending the remainder in a hammock will probably

* Read before the New England Health Institute, Boston, Mass., April 16, 1930.

tie up the body secretions to such an extent that he must resort to cathartics and correctives to maintain even a fairly comfortable existence. An office worker who immediately strips to a bathing suit and spends the day on a sunny beach, or in a boat or canoe, will probably spend the next several weeks treating his skin for sunburn and overcoming the consequent effects of loss of sleep and nervousness.

Dr. Harlow Brooks, in his book on *Angina Pectoris,* says:

> The growing habit in America of taking vacations is a step in the right direction, but in many instances some . . . select for their vacation and diversion things which impose more strain than their habitual occupation. The physician will find on any golf course men, the subject of angina or other cardiac disease, who, under the delusion that they are benefiting their health, all untrained and unprepared from a physical standpoint, indulge in stresses and strains fitted for the young college athlete, but not for the mature, and frequently overly plump business or professional man who, six of seven days out of each week, sits at the desk, stands on the turbulent floor of the stock exchange, or under the tremendous stress of the operating room. Old men try to play tennis with their sons, to defeat them at handball, to outdistance them in swimming, to outclimb them in the mountains; many of them develop angina.

These examples are not exceptional nor are they confined to those of the less intelligent classes. The idea of the strenuous life is so much a part of our very existence that we not only work strenuously, but we rest strenuously, and we do everything with a disregard for moderation which in some cases amounts to extravagance. This is what might be called typically American.

The sensible and, therefore, moderate man, especially if he is of the age which is no longer counted among the young, will gradually taper his activity up to the incline from sedentary employment to active recreation, or down from manual labor to healthful rest. He will thus avoid upsetting his bodily functions and end his vacation improved, refreshed and invigorated. He will not try to change from a pale office man to a bronzed athlete in two weeks, nor will he expect a hardened muscular body to perform its function if the stimulation of work is suddenly cut off from his daily routine.

The question of food presents a problem for those who are able to leave home for a trip or vacation. The automobile family starts out with the plan of spending the night, with dinner and breakfast, at some hotel or tourist house, and lunch at some convenient place on the road. The first night, the menu looks inviting with several dishes not usual at home, and a hearty meal is eaten. In the morning instead of the cereal, roll and coffee breakfast on the home plan, the meal may include meats, vegetables and desserts such as would usually constitute a dinner. Lunch may be a sandwich and more coffee or some car-

bonated drink. In the meantime, the call of the road is so urgent that the calls of nature are ignored, or at least not properly attended to. A few days of this régime will turn the happiest family into a nervous, sickly crew, and some time elapses before the family health is regained. A similar story might be told about other forms of vacation. Could these people bring themselves to order their food so as to at least approximate their usual habits, the vacation health problem would be far on the way toward solution. The vacationist of two weeks or less must make use of sound judgment if his recreation is to result in improvement rather than detriment to his health.

To many men the summer is the time of catching up on the exercise which has been neglected during the winter months. The waist line, which has increased from one to three inches as a result of many banquets and much sitting in at bridge, must now be reduced to normal size, and the nerves and digestion which have suffered from similar causes must be repaired. The golf links and a bright spring Sunday give the incentive for a day's outing. At the end of the first nine holes one feels just loosened up and the temptation is great to continue the round once or twice more. The result is too frequently a lame back, sore muscles and a general indisposition to work during the rest of the week, not to mention the strain on the heart which has become flabby from lack of necessity to support such an effort. A gradual course, working up from only nine holes the first day to the more strenuous game later in the summer, is much better than attempting to begin at once where one left off in the fall. A few can stand the sudden exertion; the majority must begin slowly.

THE PROBLEM OF THE STATE

With the summer recreation industry increasing steadily from year to year, the state must assume the responsibility of making every location within its borders safe for vacation purposes. In accepting this added burden, the public health department acts not only in its capacity as guardian of the health of the community, but also as the protector of the good name of the state. This dual responsibility creates one of the situations where public health and economics are so intimately connected that they cannot be separated. The success with which the problem has been attacked is shown by the remarkably small number of communicable diseases contracted in recent years among the hundreds of thousands of tourists and recreation seekers. This is even more remarkable when one considers the unstandardized methods which are applied by the different departments. Efforts are directed toward (1) Sanitation of camping places, (2) supervision of food and water supplies, and (3) control of communicable diseases.

The difficulties connected with camp sanitation are numerous and exceedingly weighty. Being almost exclusively in rural sections, where sewage facilities are not available and water supplies are inadequately protected, every camp represents an individual problem. In Vermont we find it a frequent occurrence that a prospective camp manager buys or leases a beautiful piece of scenery and proceeds to locate his buildings without a thought of sanitation until the actual construction of a sewerage system is begun. Then he finds that the ground is not suitable for sewage disposal or the bathing beach is in danger of pollution or the water supply is liable to contamination. Finally the sanitary engineer of the State Health Department is called in to eliminate the trouble. Septic tank treatment with subsoil disposal will sometimes be effective, but in many camps subsequent chemical treatment of the effluent is necessary. Occasionally, only expert engineering advice and a considerable outlay of money can safeguard the premises.

Leaving out seashore resorts which cannot be considered in this paper, the list includes commercial boys' and girls' camps, adult camps, private camping grounds, municipal camps, tourist overnight camps, roadside eating stands and tourists' lodging houses. With the formidable array of inland recreation places, it is little wonder that the health departments are at a loss to know how to institute methods of control. It is also remarkable that, considering the millions of dollars annually spent at such places, the state legislatures continually fail to provide funds for their proper inspection and supervision. Fortunately the sense of decency which is inherent in most people often saves the day when health departments are powerless.

Various codes of rules have been promulgated for the regulation of summer camps, most of which are good as far as they go, but such rules often fail to take cognizance of the individual problems caused by the variety of conditions to be overcome. It is easy to make a rule that sewage must be disposed of in a sanitary manner, but the camp owner asks how it can be done in his particular location. It is a simple matter of routine to write down that the water supply must be ample and safe, but the spring, well, stream or lake depended upon may require some safeguard or additional source to furnish the proper amount or quality. Sleeping quarters of a certain kind may be called for but frequently the camp is already established, or farm buildings have been already prepared for occupancy.

There is need of personal inspection by persons who are able to report on conditions found, and make recommendations for the best methods of bringing these conditions to a satisfactory level.

DISEASE CONTROL IN CAMPS

Outbreaks of communicable disease in boys' and girls' camps are distressing, both to camp owners and health authorities. The larger camps usually have facilities for isolation and medical or nursing attendance, but some of the smaller ones have no such arrangement. An example of the difficulty in managing such an outbreak occurred in a boys' camp in Vermont recently. Infantile paralysis was diagnosed in 2 boys, both of whom had been in the camp less than two weeks. The camp was made up entirely of tents, with no means of isolation, and in consequence about 100 boys were exposed to the disease. Arrangements were made to remove the patients at once, and an inspection was made of the entire camp population. This resulted in the discovery of 5 more who exhibited suspicious symptoms.

The question then arose as to the best method of handling the remainder. To keep all the boys together meant further exposure for all, and this we were unwilling to do. Finally, after consultation, it was decided to send all the boys to their homes at once. Every boy carried with him a letter to his parents explaining the situation, and at the same time a notification was sent to the State Departments of Health, giving the addresses of all boys within their jurisdiction. The 5 boys with symptoms were kept for several days, but none developed further manifestation, and they were subsequently returned to their homes by automobile with similar notifications. Two of these, however, later developed paralysis while they were being held in quarantine at home.

There was of course some criticism of our action in closing this camp under such circumstances, but I have yet to be informed of any safer procedure which might have been instituted.

At another camp where a resident physician was in attendance and an infirmary was available, 2 polio cases were simply quarantined on the premises and the camp allowed to continue as usual, with no further developments. Cases of measles, mumps and German measles have also been handled in the same way.

THE TYPHOID CARRIER MENACE

With the improvement in the supervision of water supplies, typhoid fever from polluted water is practically unknown. The great typhoid menace is the possible appearance of a typhoid carrier among the food handlers. Some camps make a practice of employing local residents as cooks and waitresses, and where this is done it is always recommended that they select only typhoid-free persons, as far as history and repeated examinations are able to determine. Following the

recent Canadian epidemic of typhoid, much apprehension was felt lest some of the resulting carriers should find employment in the camps. Our department circularized all camp owners and all hotels in the state warning them of the danger and, so far as we know, not a single case occurred from this source of infection.

However, the typhoid carrier is not always within the camp. A few years ago, several cases of typhoid occurred in a large camp of girls, and exhaustive examination of all employees and other possible suspects failed to explain the source of infection. Close inquiry as to the camp routine revealed the fact that on certain days in the week, the girls went to a nearby town, where they bought fruit and confectionery, and following up this clue led to the examination of an Italian fruit dealer, whose place was frequently visited. This man proved to be a carrier and on the elimination of his wares no more cases occurred.

WAYSIDE EATING PLACES

Since the legislatures are largely made up of farmers or those interested in the farm vote, and small lunch places are frequently run in connection with farms, it is practically impossible to secure the passage of regulatory laws governing such places. The plan of securing funds for inspection by means of license fees seems to be working out satisfactorily in some states, but there is yet much to be done before the idea becomes a perfect working model. These places appear over night and in most unexpected locations, and their proper supervision would require many inspectors with restricted territories. The typhoid carrier menace exists as a potential danger at every one, and no amount of sanitary inspection will eliminate it. However, such inspection should be continued, but it should be supplemented by closely following up any cases which occur and by intensive education of the public. Campaigns directed toward wholesale inoculation against typhoid among those who may patronize such stands should also be inaugurated.

OVERNIGHT CAMPS AND LODGING HOUSES

The greater number of automobile tourists divide themselves between tourist rooming houses and the so-called "overnight" camps, which are provided with shacks or cottages of varying degrees of convenience. The competition of cities has resulted in the equipment of many municipal camping grounds, which are either free or may be occupied on payment of a small fee. Most of these are supplied with city water, shower baths and suitable toilet facilities and are generally supervised by the chamber of commerce or the park or street department of the city. They give little trouble to the health department.

The trouble comes from the farmer or rural resident, who happens to have a piece of land on or near the main highway, and suddenly decides that he can draw in a few dollars by opening a camp. A few rough shacks and a dry earth closet complete the equipment and he is ready for business.

Through some twist in human nature, this type of camp is quite largely patronized, particularly by people who start out with the idea of getting back to nature. Frequently one night in such a place is sufficient to disabuse their minds of the idea, but the next day brings others, and the owner's little investment becomes a paying proposition. Meanwhile, however, the camp site is becoming more unsanitary each time it is used and the outhouse more of a menace. Sometimes a stream is available for bathing, and the wash of excreta into this stream is neither seen by the campers nor regarded by the owner. The latter usually feels that he has done his duty if he picks up the papers and tin cans and throws them over the bank.

Of course the state is supposed to supervise all these places and render them safe and sanitary, but only those who have attempted such work realize how much organization would be required to fulfil adequately the expectations of the touring public. So long as there are sufficient numbers to make such a place profitable, there will always be the problem of controlling places of this class. Let us try the fee and license method, as is done in many states. It will probably accomplish something; but unless the health authorities can arrange for very frequent inspection and are furnished with power to forbid the use of unsuitable places, the public must still assume some responsibility if it continues to patronize camps of this type and condition.

A somewhat similar situation exists in regard to tourist rooming houses. Many of the houses available on the road are of the finest type and the accommodations such as would be found in the best of homes. But unfortunately there are others of a different kind, and one cannot always tell from the outside appearance what the inside will be like. Signs showing membership in, and approval by, this or that tourist association may or may not mean anything. Many of these houses are within city limits, some even in populous sections. In licensing these places, it seems that a distinction must be made between the rural and the urban, although they all display the same kind of signs. It is assumed that the cities will supervise the rooming houses within their borders and receive the fees therefrom, while the state assumes responsibility for the rural locations. But, again, it is evident that if these houses are to be kept properly under control, a large corps of inspectors will be required.

WAYSIDE WATER SUPPLIES

The States of Michigan and Pennsylvania have been especially vigilant in inspection of wayside water supplies. These states have used traveling laboratories and plainly marked the safe and unsafe waters. Such outfits are rather too expensive for the New England States to operate unless some coöperative scheme can be devised, which is doubtful. There has been an effort, however, to protect tourists through the organizations which are available, and many such supplies have been marked within this territory. Many warnings have been given against promiscuous use of unknown water supplies, and tourists should by this time know the danger they run in drinking from wells, springs and streams of doubtful purity.

A FEW RULES

A vacation should be a change in occupation, but not too radical a change in habits.

Let the change from winter's mild recreation to summer's active exercise be carefully graduated.

The daily menu on the trip should at least approximate the meals to which one is accustomed at home.

In so far as possible, use the whole summer to recoup the winter's losses in vitality rather than trying to do it all in an intensive two weeks.

A man of 50 cannot safely indulge in all the sports of a boy of 18.

Sufficient sleep is as necessary in summer as in winter.

Light clothing is desirable in hot weather, but a cool evening demands extra wraps.

The tired-out heart cannot suddenly take up the shock of an extra load.

Flabby muscles require graduated exercise to make them strong.

The summer cold is as uncomfortable as the winter grippe and almost as dangerous. Avoid it.

Look over the place where you propose to eat before ordering lunch.

Beware of wayside water supplies and farmhouse wells. Better carry a bottle of water from a protected source.

Habits of decency should not be forgotten in the country any more than at home.

Automobile Deaths Follow Seasonal Movement

THERE is a definite seasonal movement in motor vehicle deaths, according to statistics released by the National Safety Council.

The fall months, beginning in September, are the peak of the year but the toll mounts steadily from April on through the ensuing 8 or 9 months.

As for all accidents, automobile fatalities are more frequent among men than women. In the age group from 20 to 24, the death rate among males is almost five times as high as that among females.

Technical Supervision in the Production of Highest Quality Milk*

JOHN G. HARDENBERGH, V. M. D.

Director of Laboratories, The Walker-Gordon Laboratory Company, Inc., Plainsboro, N. J.

THE subject of supervision of milk supplies needs no lengthy introduction to emphasize the place which milk holds in the modern scheme of nutrition. Beginning with infancy and extending through the important stages of body growth to maturity, milk and its products have become established in the human dietary to an extent estimated to constitute one-fourth of the total expenditure for food of the average American family. Even this figure is below that recommended as ideal by physiologists, nutrition specialists and economists.

Accepting as a fact that milk is essential to the public health and welfare, it follows that an important place must be given to the supervision of milk production and distribution. In looking back, we find that three principal influences in the evolution of modern milk supplies had their inception some thirty years ago. These were: the work of Pasteur; the introduction of the tuberculin test of dairy cattle; and the pure milk movement initiated somewhat on a philanthropic basis by those who visualized and created what was known as "certified milk."

These three factors have exerted tremendous influence over a period of, roughly, thirty years and, to considerable extent, have reached the peaks of their development in that time. That the persons back of these discoveries and ideals realized the possibilities and future bearing of their efforts seems unlikely, yet concrete evidence of their effect upon the dairy industry is today abundantly available. In this country's more congested centers of population, pasteurization has become the generally accepted method of insuring the safety of fluid milk supplies that cannot be adequately protected by other means. The tuberculin test of dairy cattle has become a requirement in progressive communities whether or not pasteurization is practiced. The pure milk movement, conceived as a specialty,

* Read before Section on Medicine of the American Association for the Advancement of Science, Des Moines, Ia., December, 1929.

has acted to raise the level of production methods and to serve as the ultimate standard for them.

Today the greatest concentration of effort is directed to the effective supervision of milk supplies with two objects in view: first, the safeguarding of the supplies as a public health measure; second, the improvement of the supplies with respect to quality of product. These efforts are being exerted not only through official channels of law enforcement but also through private or industrial channels that are primarily concerned with the milk industry as a unit in our economic system. In the first instance, protection of milk supplies comes about through official and legal means; in the second, improvement in quality receives its most effective stimulus by economic forces (such as bonuses and grading systems) operating through dealers and distributors.

You may question why such considerations are presented before a scientific assembly, but it is believed that they have a direct bearing upon the subject matter to be presented. The problem of effective supervision of our market milk supplies has become one of great magnitude, especially with respect to supervision of production. Whereas the processing and distribution of fluid milk has become rather generally consolidated into comparatively large units susceptible to and capable of competent control, the production end is still centered in the small farm where milk may be more or less a by-product. The very multiplicity of these units makes them difficult of control either from the standpoint of their possible relation to public health or of the quality of milk produced.

We may visualize the task which confronts the milk inspection service of a large city health department or the inspection service maintained by a distributing organization. These services have in many instances made commendable progress in improvement of milk supplies both with respect to disease control and quality control. Yet their task is laborious and never-ending. Chicago may be cited as an example. The Chicago milk shed comprises some 35,000 farms and about 400,000 cows—an average of about 11 cows per dairy herd. This figure is somewhat above the average for other large cities east of the Mississippi River. Detroit has some 16,000 farms supplying milk with an average of about 6 cows per herd. New York, Philadelphia, and Boston have sources of milk supply which average 7 to 8 cows per herd.

Think what these figures mean, in terms of an inspection service, either official or private, that can effectively control methods of production and the health of the dairy animals from one year's end to

another; or, in terms of innumerable human contacts with the milk produced and the attendant opportunities for direct or indirect infection of it.

To simplify the complicated problem of supervising milk supplies either as to quality or safety, we must consider a development in the production of milk which will compare with the developments that have already transpired in the processing and distribution of fluid milk. This means a consolidation of milk production into larger units —units of economic size—which by their comparative magnitude make possible a highly developed system of *production management* and *technical control.*

Under such a plan, milk is not a by-product but rather a highly specialized product susceptible to every degree of sanitary, hygienic and quality control which the systematic management of affairs by economic units makes possible. How these control forces are made to function will be described later.

With respect to its public health significance and the channels through which milk may become infected, two principal phases will be considered: bovine diseases directly transmissible to man through milk; and human diseases directly or indirectly transmissible thereby.

BOVINE DISEASES

Tuberculosis—Tuberculous infection of man with the bovine virus has been the subject of exhaustive studies for many years and is now quite generally understood. In a relatively small proportion of cases, milk becomes infected with bovine tubercle bacilli due to udder tuberculosis. More frequently, however, the method of milk infection is by passage of the bacilli through the intestinal tract, the organisms being excreted in the feces of some tuberculous dairy cows. Under ordinary dairy conditions it is very easy for more or less manure from such cows to be introduced into the milk during milking, thus infecting it with the bovine organism.

Protection against human tuberculosis of bovine origin has come about in this country through the operation of two factors: the tuberculin test of dairy cattle, and the pasteurization of the ordinary market milk supplies in the centers of population. If the bovine type of infection in man continues to occur in the United States, it is likely to be a rural problem largely, associated with rare instances in which families or small communities use milk from untested herds and where pasteurization is not economically feasible and probably will not be practiced for many years. Enthusiasts may say that even this problem will be solved by pasteurization in the home but they fail to take

into account the element of human nature in following lines of least resistance and the preference in many places for raw milk.

The basic solution for the prevention of bovine tuberculous infection in man naturally rests in the eradication of the bovine disease. This is coming about very rapidly through the operation of the national coöperative program engaged in by the state and federal governments since 1917.

Pasteurization has played a big part in decreasing the incidence of bovine tubercle infection in man, but in a fundamental sense it has served only as a substitute for better means. The health authorities of Chicago recognized this when they made the requirement for tuberculin tested herds, even though the milk from them was to be pasteurized. The idea is becoming increasingly repugnant to all that any process can replace standards of health for dairy herds and dairy employees and standards of sanitation for dairy methods.

To those who are inclined to question the efficiency of the tuberculin test of dairy cattle it may be said that progressive dairymen are not concerned so much about the relatively small number of so-called no-lesion reactors removed from their herds as they are about the possibility of the occasional cow that may be actually infected and yet fail to react. On this point, a few data may be of interest.

In a large dairy herd which has been under federal and state supervision for a number of years, a considerable number of cattle are sold out of the herd each year to slaughter where they are subjected to post-mortem examinations under official inspection, particular attention being given to possible lesions of tuberculosis. Records are available covering the autopsy findings on 2,117 cows (negative to the tuberculin test) sold out of the herd during the past three years. Of these 2,117 cows, only 8, or 0.37 per cent, showed lesions that may have been tuberculous. Of these 8 cases, 2 animals showed calcification of the posterior mediastinal lymph nodes only; 2, hemorrhagic lesions only of the same nodes; 1, a small calcified lesion in the head; 1, calcified lesions on the exterior of the uterus; 1, a calcified lesion in a hepatic lymph node; and 1, skin lesions which proved to harbor acid-fast organisms resembling *Mycobacterium tuberculosis*.

It is interesting to note that not a single case was found in which the presence of a supposedly tuberculous lesion was of such a nature as to be significant either with respect to infection of the milk or to spread of the disease to other animals. The incidence of possible tuberculous lesions (0.37 per cent or 1 in 262) in cows negative to the tuberculin test indicates an efficiency which compares very satisfactorily with any other diagnostic test we know.

Brucella abortus infection.—The part that milk plays in the etiology of Brucella infections in man is extremely difficult to appraise at the present time. The state of our knowledge is nothing less than chaotic. Scarcely any two investigators may be found whose ideas are in accord as to the types of organisms isolated from human cases seemingly infected through milk, or who agree as to the exact methods for identification and differentiation of the various strains isolated. It has been very easy to ascribe cases of undulant fever to raw milk and it must be accepted that in some instances the infection has been so acquired. On the other hand, deliberate attempts to produce human infection through the ingestion of milk heavily inoculated with *Brucella abortus* have failed conspicuously.

Epidemiological studies have shown that, in a majority of cases, a history of consuming raw milk may be obtained but, in the same cases, at least 50 per cent had other contacts with Brucella infection. In certain sections of the country, Brucellosis in man is obviously milk-borne while in others it is just as obviously an occupational disease. It is a significant fact that those scientists who for many years have studied Bang abortion disease in cattle and related types of infection are the least willing to proffer set opinions and ready solutions for the problem. Therefore, it behooves those of us with lesser experience to be cautious and to await the results of more mature observations before attempting to prove the actual rôle played by milk.

However, so long as there remains a reasonable doubt and so long as milk is reputed to be a danger as a carrier of Brucella infections, the supervision of milk supplies must provide for adequate safeguards. This may be accomplished either by pasteurization or by elimination of Brucella infections in dairy herds. It must be borne in mind that neither of these systems will affect the complete control of human undulant fever, perhaps not even the major portion of such cases.

With respect to the elimination of Bang abortion disease from dairy herds, it has been demonstrated that the agglutination test is reliable for the detection of *Brucella abortus* infection. The removal of reacting animals will serve to remove those that are shedding the organism in the milk. Exceptions to this are so rare as to have no practical significance. In discussing the efficiency of the agglutination test, a statement has been repeated in medical literature to the effect that many cows eliminate *Brucella abortus* in milk and still fail to react to serum tests. This is a damaging criticism which is not supported by the facts, it being in the nature of a biologic impossibility to have localized infection in the udder without eventual transfer of agglutinins to the blood stream.

HUMAN DISEASES TRANSMISSIBLE THROUGH MILK

In discussing the human diseases it is desired to consider two types of infection: the first, in which the infection of the milk may be direct, as in typhoid fever; the second, in which the infection may be indirect (from man to the udder), as in septic sore throat and scarlet fever.

In the case of typhoid fever, the human carrier is the element which must be eliminated. This is recognized in all well organized supervisory systems that control milk supplies, whether raw or pasteurized. It is essential that all milkers and milk handlers should be examined by suitable tests and every effort made to exclude the possible carrier. Milk has little if any bactericidal action against typhoid bacilli and not even pasteurization can be depended upon as an absolute safety factor if the carrier has access to the milk following the heat treatment. This was illustrated in San Francisco where the work of efficient pasteurization was nullified by a typhoid carrier who operated the bottling and capping machine.

Septic sore throat and scarlet fever are of special interest in milk control work because they present two possibilities in relation to milk infection: the infection may be direct as from a milker or other dairy employee, or it may be indirect as through the infection of a cow's udder by a human carrier. In the case of direct infection, it is not reasonable to suppose that any extensive epidemic could occur, inasmuch as it would be difficult for a human carrier to infect milk so grossly that any considerable portion of it would carry infective dosages. This is particularly true of large supplies wherein the ultimate dilution of any given direct contamination might easily make subsequent human infection an extremely remote possibility.

Furthermore, Jones[1,2] has shown in his studies of the influence of milk on the growth of scarlet fever streptococci, and in his studies of the bactericidal properties of milk, that certain streptococci of human origin are very susceptible to the effects of milk and that they fail to multiply in fresh unheated milk or in milk heated as high as 62° C. for 20 minutes. The significance of these observations lies in the reasonable supposition that no extensive epidemic of scarlet fever or septic sore throat can occur through the medium of direct human infection of a milk supply.

However, extensive infection of milk supplies with human types of streptococci can occur through the medium of the udder of the cow as a secondary host. This has been the case in several milk-borne epidemics of septic sore throat in which *S. epidemicus* has been inoculated, as it were, into one or more quarters of an udder by an infected

milker; the same occurrence has been noted at least once in the case of *S. scarlatinae*. The subsequent multiplication of these streptococci in the medium furnished by the milk and udder tissues may result in millions of these pathogens being discharged into the milk produced by the infected cow and so into the herd product, since there may be no immediate indication of resulting mastitis to warn the dairyman.

As a rule, in epidemics in which pathogenic streptococci of the human type have been traced to infected milk, we see the combination of a relatively small herd, perhaps only a few cows, the milk from which is sold raw; the presence of a cow with an infected udder; and methods of milk production which pay too little attention to minor udder disturbances and very little attention to the health of dairy employees. Under such conditions, it is possible for a milk supply to carry infective dosages of pathogenic organisms.

In large herds where the milk of any one cow may be mixed with the milk of, say, 100 other cows, the dilution factor may operate to reduce the chances of infective doses of pathogens. We know that such must be the case because cows harboring *S. epidemicus* have been found at a time when there was no occurrence of septic sore throat among the consumers of the milk.

The significance of hemolytic streptococci in milk may be said to depend almost entirely upon whether the species present are of bovine origin, incapable of producing disease in man, or whether they are of human origin, having gained entrance to the milk directly from a human carrier or indirectly through the medium of a cow whose udder has been infected by a human carrier.

So far as beta hemolytic streptococci of bovine origin are concerned, it has been shown that they are commonly found in mixed herd milks, both raw and pasteurized. Several species have been identified, the most frequently occurring being *S. mastitidis*, so named for its association with mastitis in cows. It may also be found living in the udders of cattle with no symptoms of udder inflammation. Its presence is not objectionable except as a possible indication of mastitis and it probably has no true significance as to human health.

Our knowledge of the characteristics of pathogenic types of hemolytic streptococci has been put to the most practical use in the modern laboratory methods for control of certified milk production. Today it is a routine procedure on a few certified milk farms to examine on blood-agar the milk from every fresh and new cow prior to admission to the milking line. In addition, the entire producing herds are checked at frequent intervals by means of group samples which are also plated in blood agar. The occurrence of any suspicious types

of streptococci in such a group sample is followed up by a recheck of the individual cows contributing to the group in order to locate the animal responsible. These laboratory control methods have been described in detail elsewhere.[3,4]

In this discussion of milk and its relation to the transmission of disease either of human or bovine origin, I have dealt only with some phases of the problem to which special significance is attached by sanitarians. The necessity for intelligent and effective supervision of milk supplies is evident. The supervision must primarily insure adequate protection for the public health and secondarily improve the quality of milk at the source.

Pasteurization has served an indispensable purpose in contributing a relatively high degree of safety to the milk supplies of the more thickly populated sections of the country. Properly applied, the process has a place and a value in the prevention of milk-borne disease that every progressive individual must recognize. With present standards for health and in the present state of development of our milk-production industry, the increasing demand for pasteurization is justified.

We must recognize, however, that neither the heat treatment of milk nor any other processing method removes the causes and defects which make pasteurization necessary. Neither does any heat processing treatment add to the intrinsic value of milk as a food product. These considerations are fundamental problems which leaders in the dairy industry are determined to solve in order that the milk production phase of the dairy industry may keep pace with other developments. The ideal that is being sought is that of a fundamentally sound milk embodying the highest possible attainments in safety, cleanliness and nutritional values at the source. Given such a product it may then be consumed raw or may be subjected to additional processing of proven benefit.

To a considerable extent, the basic principles underlying the production of the highest quality milk have been developed and demonstrated. As stated in the beginning, these requirements are related principally to production management and technical control of production. Production management begins with the fertilization of forage and grain crops to be fed dairy animals, includes the breeding and raising of dairy heifers free of disease, and oversees the feeding and care of the producing cows so that they operate at a maximum of efficiency. The production management must maintain the best conditions under which the cows are stabled and fed, such as cleanliness, ventilation, cleaning and bedding of the cows, condition of the feed and provision for water.

The technical control of production now in operation on a few farms comprises four divisions of activity: medical, veterinary and laboratory supervision, and nutritional control. While functioning in a special way, each division is interdependent and coöperative with the others.

Medical Supervision embraces physical examinations of all dairy employees before employment with special attention directed to signs of tuberculosis and venereal disease and special examinations to detect carriers of typhoid and other pathogens.

This primary examination is followed up by weekly reëxaminations of all milk handlers and by a system which provides for efficient daily medical attention as required, associated with quarantine and hospital facilities.

Veterinary Supervision is organized with three principal purposes: To prevent disease among the milk cows and other cattle in the herd; to detect disease, when it does occur, at the earliest possible moment, and take the necessary measures for isolation and cure or eradication; and to supervise the sanitary requirements in the production and handling of the milk. Veterinary supervision is accomplished:

1. By examination of all cows prior to purchase or by supervising the raising of healthy dairy heifers for replacements
2. By supervision of the entire herd by trained personnel
3. By inspection of the milk from each quarter of the udder of every cow in the producing herd prior to each milking (This inspection constitutes the "foremilk" examination and is one of the most important routine procedures in detecting abnormal milk and early indications of mastitis.)
4. By repeated tuberculin tests and removal of reactors
5. By repeated blood tests for *Br. abortus* infection and removal of reactors
6. By a regular and systematic sanitary inspection to insure the maintenance of conditions and the practice of methods which will protect the milk from contamination after it is drawn

Laboratory Supervision has for its principal purposes:

1. To assure that only cows producing normal milk are in the milking line
2. To assure the cleanliness and practical sterility of all apparatus and utensils in which the milk is handled
3. To assure the freedom of the milk from pathogenic bacteria
4. To coöperate with the veterinary forces in the control of animal diseases

Laboratory controls are in addition to and coöperative with the veterinary supervision, the latter being dependent to an extent upon the laboratory for information necessary in passing judgment upon the fitness of individual cows for production.

Laboratory Supervision is accomplished:

1. By examination of the milk from all new and fresh cows prior to admission to the producing herd—This examination comprises a leukocyte count and a determination of the numbers and kinds of bacteria present. The blood-agar plate method is an indispensable adjunct to the detection of undesirable bacteria that may gain entrance to milk, particularly pathogenic strains of streptococci such as have been shown to be associated with septic sore throat and scarlet fever.

2. By examination of the milk from cows that have been detected by the foremilker. Flaky milk for instance is an early indication of udder trouble. These combined examinations of abnormal milk permit the early recognition of udder ailments, particularly mastitis, and the subsequent early hospitalization and treatment of cases before they become firmly established.

3. By examination of the entire producing herd at frequent (weekly) intervals by means of group samples. These tests insure that cows once having been passed for production are under periodic examination to detect any abnormalities that may not be apparent on physical examination of the udder or gross examination of the milk.

4. By so-called equipment and efficiency tests. All apparatus and utensils are checked for cleanliness and practical sterility. These tests serve as checks on all processes of production from the time the milk leaves the cow until it is filled into the final containers.

Nutritional Control is essentially quality control in that it is organized to utilize all the scientific knowledge available to aid production of a milk containing every desirable element that can be incorporated by natural means.

Having outlined the control methods for a complete technical supervision of milk production, consideration must be given to the practical application of the plan, its feasibility and its operability. To suggest that any such plan could be applied to the small farm units now characteristic of the dairy industry or that it could be applied by boards of health, would be to suggest an economic absurdity.

By those who believe in the principles underlying the production of fundamentally sound milk, consideration is being given more and more to the thought introduced earlier in this paper—the development of dairy units of sufficient size so that scientific methods of production coupled with complete technical control can be made an economic success. A few such units are already operating. We believe that the principle is sound and that it offers opportunity for the future advancement of clean milk and its relation to health and nutrition.

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Open Air Class, Sunshine Hills, Springfield Lake (Ohio) Sanatorium

What Is a Preventorium?

H. E. KLEINSCHMIDT, M. D., F. A. P. H. A.

Director, Health Education Service, National Tuberculosis Association, New York, N. Y.

IN 1906, there was established at Ste. Agathe des Monts in Canada a convalescent home known as "Brehmer's Rest," for adults who had suffered an acute and depleting illness. The idea back of it was that severe illness of any kind predisposes to tuberculosis and that, therefore, the convalescent should be surrounded with protective care until his full powers were regained. In 1907, S. Adolphus Knopf, M.D., while visiting Brehmer Rest, called attention to the fact that this was, in effect, a form of preventive care. He, therefore, suggested that the home be called a "preventatorium." The following year, 1908, that designation appeared prominently on the cover page of the *Fourth Annual Report*. Evidently the term was cumbersome, for two years later the Annual Report of the institution bore the title, "Brehmer Rest," with the sub-title, "Preventorium"

In 1909, New York City, through the interest of Alfred Hess, M.D., established at Farmingdale, N. J., an institution to take care of pre-tuberculous children. It was called a preventorium. Unlike the Canadian institution, which was designed for adults recovering from a disease, it was exclusively for children presumably threatened with tuberculosis. Soon, other institutions of a similar character sprang up, though progress was intermittent, and practices and procedures were not uniform.

Ideas as to what the preventorium was supposed to be and do were by no means standardized. The bases of selecting children and the procedures of caring for them varied considerably as the views of

Top—Prendergast Preventorium, Boston, Mass. Original building before additions were made

Middle and lower—Supervised play, of a kind which will not tempt the children to overtax their strength, is an essential element in preventorium treatment.

those responsible differed. Moreover, exact knowledge of how tuberculosis affects children was very meager. However, the dominating purpose of all was to provide care for the sick child. The term, "pretuberculous," was applied rather loosely to the child with actual tuberculosis, the child of a tuberculous household, and the child below par in health, as expressed usually in malnutrition; but all were regarded as sick children. (More recently, we have learned to differentiate between mere infection, massive infection, and actual disease.)

Quite another development in these early days was the establishment of fresh air schools, open window rooms, day camps, and the like. Here the major purpose was not to care for sick children but to increase the resistance of certain selected persons, who for one reason or another were presumed to be potential victims of tuberculosis. The emphasis was on health building rather than on disease prevention. Meantime, fresh air, as such, had lost its fetish connotations, while gradually there came the recognition that the beneficial effects were to be derived chiefly from rest, a well regulated regimen, and good nutrition. Preventorium opinion also passed through the same kind of evolution, for which reason the two types of institution have tended to merge in their objectives and procedures. That is why it is impossible now to answer statistically how many "preventoriums" and "fresh air schools" there are in the United States. The names persist but they tell us little about the character of the particular institution's philosophy, mode of procedure, or equipment. Some, indeed, have degenerated into mere routinely operated asylums, having only a vague notion of what the real needs of the beneficiaries are and what they are actually trying to achieve.

Three years ago, the Committee on Preventoria of the National Tuberculosis Association formulated this definition:

> A preventorium is a 24-hour institution for the care and observation of children substandard in health.

The general purpose of this institution was assumed to be giving preventive care to children threatened with tuberculosis, heart disease, or other potential disability. While the committee was unable to define exact standards of eligibility, it indicated broadly the groups from which selections for the preventorium might be made:

1. Children exposed to tuberculosis at home, or in whose immediate family there has been a recent death from tuberculosis.
2. Children who have had tuberculosis, whose lesions are not active, and who appear to be in need of further care and observation.
3. Children suffering from malnutrition.
4. Children who tire easily and who are unable to carry on their class work.

5. Children frequently absent because of colds, bronchitis, etc.
6. Children suffering from rheumatic heart disease (of certain classifications).

According to these somewhat rigid standards and definitions, there are perhaps no more than a score of preventoriums in the country. However, opinion has modified considerably during the three intervening years, and it is now recognized that many children who need protective care do not require the exacting régime furnished by a 24-hour, highly specialized preventorium. With no intent to sketch further the historical development of the preventorium, the following types of institutions are given as being more or less typical:

At the Springfield Lake Sanatorium at East Akron, O., there is a special group of buildings, mostly for children with tuberculosis of the childhood type. It is superintended by the medical director of the sanatorium. It keeps the children 24 hours of the day and operates the year round. The children are at all times under medical and nursing supervision and the school curriculum is reduced to a minimum. They stay on an average of a few months each and are then transferred to one of the city's open window schools. Apparently, the main purpose is to train the child in right habits of living, with the major emphasis on health conservation rather than on schooling.

In Lucas County, O., is a fresh air school which cares for children 24 hours a day but permits them to return to their homes over the Saturday and Sunday week-end. The school is a unit of the county tuberculosis hospital, while the teachers are provided by the Toledo Board of Education. (Toledo is in Lucas County.) The operation is about the same as that of the Springfield Lake Preventorium, with the important exception that children are permitted to remain at home two days of the week.

Lymanhurst, at Minneapolis, is essentially a day school. The children live at home, but the noonday meal and supplementary luncheons are provided by the school staff. Cots for rest periods are also provided by the school, and the children are under special medical and nursing supervision. Meantime, conditions in the home are carefully scrutinized and supervised by a special public health nurse.

There are numerous fresh air schools, open window schools, and nutrition classes, most of which have developed beyond their original purposes. Some of the fresh air schools, it is true, are no more than the name implies, but others provide special supervisory care, extra meals, rest periods, and direction in play. While the procedure and equipment are not uniform, the main purpose of all of them seems to be to give handicapped children an extra lift in order to prevent the threatened disaster of pulmonary tuberculosis in later years.

Top—Theodore Potter Fresh Air School, Indianapolis, Ind.
Middle—Supervised Play
Lower—Open Air School, Preventorium, Farmingdale, N. J.

Health camps there are of all varieties. As a matter of fact, many of them are in reality recreation camps, which justify their existence only on the theory that a period of a few weeks of outdoor life makes for better health. In some instances, health camps serve to enlarge the vision of the people generally so that they are more readily persuaded to establish a year-round preventorium. In others, emphasis is placed on the opportunity which the camp affords for teaching children and their parents the principles of healthful living.

One clear conception seems to have been established—though not yet fully accepted—and that is that children with the adult type of pulmonary tuberculosis should be isolated in the children's division of the tuberculosis sanatorium, not only because they are definitely ill, but also because they are potential spreaders of the disease, having tubercle bacilli in the sputum. The manner in which preventoriums are operated is a tacit recognition of the belief that children with the childhood type of tuberculosis are not really ill, but rather threatened with illness; certainly, a sick child should not be in a preventorium, which is in fact a school.

Confusion arises from the fact that most of us think of the preventorium in terms of bricks and stones. We become so absorbed in the architectural requirements and the physical facilities that we lose sight of the therapeutic or prophylactic principles. There would be less confusion in our thinking, no doubt, were we to limit our discussions not to buildings and staffs of doctors, nurses and teachers, but rather to "protective care," with the understanding that such care is not necessarily dependent on a formal institution but may be carried out in various ways, even without removing the child from his home.

Speaking in terms of the clinician, the "indications for treatment" for a child with the childhood type of tuberculosis are:

1. Contact with the tuberculous adult, who presumably has infected the child, must be broken. This is done by removing the tuberculous adult to a sanatorium, or by taking the child out of the home. If both of these expedients are impractical, every member of the household must be taught the principles underlying the transmission of tuberculosis.

2. The child must be relieved of all possible strain, which means the avoidance of strenuous exercise and burdensome school work. Rest is the cornerstone on which preventorium care is based.

3. The child's health must be built up, which means that all physical defects must be corrected and the benefits of good food, sunshine and fresh air must be made available.

4. The psychology of the child must be adjusted so that he will not think of himself as being inferior to others with greater margin of resistance, and yet restrain over-ambitious impulses.

These indications for treatment can, under ordinary circumstances, be met without the aid of a definite institution, but there are, of course, numerous "problem families," as the social worker calls them, where it is impossible to meet the requirements enumerated above. These problem families are not limited to the poor or ignorant, but include many of intelligence and means which, for one reason or another, are unable to afford the child the protection which he needs.

It seems clear, therefore, that while no formula can be given for the solution of the problem, an understanding of the general principles should enable any community to work out its own solution and determine the type of preventorium care which best suits its needs. It is obvious, too, that the various attempts now being made to cope with the problem are in the nature of experiments. We shall probably not be able to say that this type or that type of preventorium is better than any other until several years have elapsed.

Fortunately, the authorities of a number of preventorium institutions are carefully following their pupils into adult life in order to learn what their subsequent experiences may be. In a few years, when more of such data have been collected, we may be able to determine more precisely what the ideal form of organized care may be but until that time comes, the burden is upon us to study our individual community needs and to provide facilities which will meet the indications of treatment as we understand them today.

The fishing is good at the summer camp where this boy is training for health

Care of Communicable Diseases in General Hospitals*

JAMES WALLACE, M. D., F. A. P. H. A.

Associate Field Director, Committee on Administrative Practice, American Public Health Association, New York, N. Y.

THE statement herewith submitted takes on the form of a report rather than of a regular paper on the above named subject, and is based on a more exhaustive report which is being presented to the Sub-Committee on Organized Care of the Sick.

There has been an effort in the last few years to find out whether it is advisable to hospitalize communicable disease cases in pavilions or wards which constitute part of a general hospital. This year the Committee on Organized Care of the Sick undertook, as it did two years ago, to collect information from a large number of cities. The present report represents an attempt to get information from every city in the United States with a population of 30,000 or over. A questionnaire was sent to 250 cities—a general questionnaire to 192 cities which it was thought, by previous reports, did not hospitalize communicable disease cases in general hospitals, and a more detailed questionnaire to 58 cities in which it was believed to be the practice to do so.

Of the 58 cities receiving the special appeal for information 51 replied, while of the 192 only 70 replied.

The total of 121 replies indicated that in 38 cities communicable disease cases were hospitalized in general hospitals, though about 16 of the 38 stated that only special types of communicable disease cases were admitted, such as typhoid fever, venereal diseases, tuberculosis or some of the more chronic, and less acutely communicable types.

On the basis of the information obtained by these questionnaires, through data gained by special personal investigations made by the writer, and as a result of observations extending over a period of time made by a group of the American Hospital Association, that association, at its annual meeting this year, adopted a resolution favoring hos-

* Read before the Health Officers Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 2, 1929.

pitalization of communicable diseases in general hospitals, particularly in communities where the population is not more than 100,000.

The special investigations made by the committee of the American Public Health Association have consisted of personal visits to 8 cities to obtain as complete information as possible on how communicable diseases were being hospitalized and how satisfactory or unsatisfactory the practice followed was proving.

The 8 cities visited were in eastern states, but 2 additional cities in more westerly areas were investigated and had special reports made upon them by local investigators. This means that of the 121 cities that reported, there were 10 that were canvassed pretty thoroughly to find out what relationship, if any, the hospitalization of communicable disease cases had to general hospitals.

The 8 eastern cities visited were: Stamford and Greenwich, Conn., Newport and Providence, R. I., West Newton and Somerville, Mass., Binghamton and Albany, N. Y. The 2 western cities were: Racine, Wis., and Topeka, Kan.

In 3 of the eastern cities, namely, Providence, Somerville and Greenwich, it is the practice to send all communicable disease cases for hospitalization to a special contagious disease hospital; in the other 5, communicable disease cases are sent to a general hospital where they are cared for in a pavilion or in wards set apart for the purpose.

Providence is a city of about 275,000 population but cares for a population in the metropolitan area of more than 400,000. The special contagious disease hospital of 190 beds at Providence is already overcrowded and additions for communicable disease cases will soon have to be made. There is a definite place for a communicable disease hospital as a separate institution under such conditions, and particularly when the present hospital was built by the city in response to a demand that some place be definitely set apart for communicable disease cases. The cost per patient per day in 1928 was $4.58.

The other 2 cities having special isolation hospitals were Somerville and Greenwich with populations respectively of 103,000 and 26,000. In one of these the expense of caring for communicable disease cases in hospitals was exceptionally high, being $14.50 per patient per day; in the other, the costs were not so high, but it was felt that there was considerable unnecessary overhead expense, as the isolation hospital was often empty or almost so, and yet the full hospital staff had been retained.

In the other 5 cities visited the communicable disease section was administered as part of the general hospital, and the costs on the average were lower than in the 3 already named. It was the opinion

of those connected with these hospitals that there were distinct advantages in having a communicable disease division as a definite part of a general hospital, with little or none of the imagined disadvantages; in many cases too, the link-up was believed to carry a distinct advantage to the general hospital itself.

Where the communicable disease section is a component part of the general hospital there is a constant urge and stimulus in that section to see that it does not fall below the highest standards adopted and followed in other sections of the hospital. Where the communicable disease hospital on the other hand is a separate unit there is no such direct stimulus, and frequently the hospital, if not large enough to demand a well organized staff, reaches a rather low point in efficiency and organization.

There were no more cases of cross-infection where communicable disease cases were hospitalized in general hospitals than where they were cared for in special contagious disease hospitals. There were very distinct advantages to both hospital and patient by having communicable diseases cared for in general hospitals.

Some of the important matters to be considered in deciding which arrangement is more suitable and should be adopted for the hospitalization of communicable disease in a community are:

1. What is the present volume of communicable disease to be provided for and what will likely be the volume for some years to come? The preventive methods now being used are reducing the number of certain types of cases, so that in smaller communities it is seldom a case of those types has to be hospitalized. On the other hand, people are being educated to the use of hospitals, so that a much larger percentage of communicable disease cases are sent to hospitals.

2. The second main point and the most important one is—What method of hospitalizing communicable disease cases renders the greatest service to the community? Communities differ in population and in character. Where there is a sufficient number of communicable disease cases to be hospitalized to justify a well equipped, fully organized isolation hospital, this form of provision is usually the one of preference, but where the community is comparatively small, say under 100,000 population, or where the communicable disease cases are few in number, or fluctuate greatly from time to time, in order to insure the existence of an operating plant that will be available for service at all times, the link-up with a general hospital seems preferable.

3. As secondary to the service to be rendered, there is the question of cost to the community. Some ill-equipped isolation hospitals, which are little better than pest houses, have been operated at very low cost, but where comparable service and equipment are provided, it is the general experience that in the smaller cities and towns, communicable disease cases can be cared for as part of a general hospital's function at a considerably less cost.

4. The fourth item to be considered is—How does the communicable disease section relate itself to other hospital facilities? Does it handicap them in any way by being closely related, or in juxtaposition to them? The experience of general

hospitals with a communicable disease section has been that the arrangement carries no necessary hazard to the hospital proper, but rather helps to complete the general hospital's facilities, and to provide within the hospital's own borders more adequate equipment for the hospital care of all types of disease.

For the hospitals in the 8 cities visited and the others giving information through local investigators the following were a few of the advantages cited:

From the standpoint of the patient—There was the special equipment, readily available if an emergency or complication should arise, which is not usually found in the smaller isolation hospitals. There was too the availability of the general hospital staff (surgical and medical) for emergency service, and finally, in the smaller institutions there were advantages in diet and in other extras which are procurable where large numbers of persons are being treated, but are more likely to be lacking where the numbers are few.

From the standpoint of the hospital—There are claimed to be distinct advantages:

1. Through the reduction in personnel of administrative staffs and the administration of the two types of hospital as a single unit.

2. In reducing the total hospital costs to the community. A common heating plant, a common electric plant (in one instance the electric plant was a hospital plant), a common diet kitchen, common custodial care of plant, and many other interrelated services covering all divisions of the hospital aided in cutting down costs. Again, the staff and personnel may be adjusted in number according to needs much more readily, and savings can thus be effected.

3. The arrangement has distinct advantages in training and giving practical experience in dealing with communicable diseases to nurses and interns as a correlated part of their training.

4. There seem to be no insurmountable legal obstacles in the way of establishing hospital facilities for the care of communicable disease cases within the precincts of a city, as James A. Tobey, Dr.P.H., says in *Public Health Law* (page 114), "The operation of a hospital for communicable diseases within its limits cannot be prohibited by a municipality under its police power, as this would be unreasonable." (See Brissel vs State 87 Ohio Statutes 154 and Ohio State vs Sippel 11 N. P. 555. See also *Public Health Reports*, 1926. Jardine vs Pasadena, California, where the court held that hospital facilities for communicable disease cases could not be excluded from city residential districts.)

5. The link-up has distinct advantages in inducing people to go to a general hospital for treatment, who might be averse to going to one definitely labelled as an isolation or contagious hospital.

6. The arrangement has its widest application and greatest usefulness in the smaller cities and towns that cannot very well afford to maintain two or more hospitals, but can and ought to support one well articulated hospital.

7. Already a considerable number of cities and towns are making use of the plan and are finding that it has distinct advantages, and that with proper aseptic nursing there is practically no danger of infecting patients or persons in the general hospital proper.

Prejudice dies hard, but it is dying. The prejudice against a communicable disease hospital which required that it should be placed far out on the outskirts of a town or in no man's land, has not yet been completely banished. Many cemeteries are now well within the precincts of cities, though when the sites were first selected they were far out of the town. The very growth of cities has of necessity largely broken down the prejudice or superstition regarding cemeteries, and in urban areas and in the more generally densely populated communities, necessity has also largely broken down the prejudice against communicable disease hospitals.

That considerable numbers of cities and towns are already provided with a communicable disease section as part of a general hospital has already been shown. That more municipalities have not taken similar action is no doubt due to past prejudices, and lack of familiarity with the actual facts as to the means of spread of communicable diseases. These unfounded prejudices have occasionally caused real estate dealers to oppose the placing of a communicable disease section nearby a general hospital, whereas experience and knowledge have shown that with the precautions now well known and practiced in every modern hospital, there is practically no danger to either the hospital proper or to the community. The risk is perhaps less than it would be from the possibility of a sewer pipe leaking or breaking and thus contaminating water supplies, and yet we all believe in sewer connections. A good communicable disease division as part of a general hospital is an asset to a community and should increase rather than decrease real estate values.

Commonwealth Fund

THE Commonwealth Fund announces the appointment of 33 students from British and Colonial Universities and the British Colonial Service to Fellowships for annual study in the United States, the appointees being scheduled to enter American universities in the fall of 1930, to travel extensively through the United States in the summer of 1931, and to complete a second year of study before returning home.

These Fellowships were established in 1925 as a contribution toward the development of understanding and good will between Great Britain and the United States. To date, 148 Fellows have been appointed, representing the majority of English, Scottish and Welsh universities, as well as many from the Dominions and Colonies. The Fellows are allowed to choose their own course of study. It is interesting to note that only one of the new Fellows has selected a subject concerned directly with public health—Sanitary Engineering. One other has selected entomology, a subject which is of growing importance in public health.

The Fellows were selected by the British Committee of Award, of which the Prince of Wales is Honorary Chairman.

Administration of Swimming Pool Standards in Detroit*

WILLIAM. H. CARY, JR.

Assistant Sanitary Engineer, Department of Health, Detroit, Mich.

IN outlining the experiences of the Detroit Department of Health in administering a program of swimming pool sanitation it seems desirable to outline in brief the extent of the problem. Over 2,000,000 registrations were recorded for the 40 pools operating during the year 1928—an average per pool of about 50,000 swims.

One of the smallest pools in the city, the Clare Boys pool, which is only 16′ x 48′ and holds only 23,000 gal. of water, had a bathing load of approximately 14,000 during the month of July, 1928.

During the year ending September 30, 1929, 8 new pools were opened, and during the last 4 years an average of 5 new pools a year were opened. Together with this we now have 7 pools under construction and expect that they all will be in operation by the spring of 1930.

The supervision of the sanitary conditions of the pools is placed in the Sanitary Bureau of the Department of Health. An assistant sanitary engineer and 3 inspectors devote a major portion of their time to this work. Samples are analyzed under the supervision of the director of the department's laboratory.

Supervision consists for the most part of 4 main subdivisions: Control of the use and operation of the pools; preparation and publication of reports showing the sanitary rating of the pools; an educational program to bring before the operators, instructors and bathers the essential principles of swimming pool sanitation; and supervision of the alteration of present pools, and the construction of new ones.

The Department of Health aided by the Health Education Department of the Board of Education and the Department of Recreation have drawn up a set of "Swimming Pool Regulations" governing the use and operation of swimming pools. These regulations govern the temperature of the pool water, and outline the rules for

* Read before the Public Health Engineering Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 2, 1929.

users of the pools and the duties of the swimming instructors, the pool operators, and the Department of Health.

It is desirable to keep the temperature of the pool water within a range where bacterial growth will not be rapid, and still have the water warm enough so non-swimmers and beginners will not be chilled unduly. For these reasons a range from 72° to 78° F. was chosen. Pools used mostly by good swimmers are kept near the lower temperature and those used for teaching purposes are kept near the upper limit.

Bathers are required to take a shower bath, warm water and soap, before they can use the pool. Doctors' certificates are not required and since our swimming instructors who make the inspections are only laymen, they have been instructed to bar from the use of the pool all persons who in their opinion do not appear to be in perfect health. Persons with lesions or abrasions of the skin, even though these are covered with adhesive tape or collodion, are likewise barred.

Spitting and spouting in the pools are prohibited. Every precaution possible is taken to prevent the tracking of dirt into the pool room.

For the last several years we have had some difficulty with plantar warts and ringworm of the feet. In 1926, we made a study of the prevalence of plantar warts in one of the intermediate schools. At that time it was found that the cases and the case rate increased rapidly, in direct proportion to the length of stay of any class in that school building. Because of the gymnasium and swimming pool facilities the intermediate schools were used at night by the Department of Recreation for play classes of adults, and to a limited extent by children from other schools. It was found that this group was practically free from warts of the feet. Their attendance at the pools and gymnasium was but infrequent and covered but short periods of time.

One school was used as an experiment. After rigid inspection, all infected individuals were excluded from locker rooms, showers, pool, and gymnasium. These rooms were scrubbed, washed with a solution of 1 to 1,000 bichloride of mercury, then dried and aired. All infected persons were put under treatment with their private physicians or hospital clinics.

Comparatively few new cases were found during the school year and at the end of May it was found that all but 2 cases were reported as cured and returned to regular gymnasium work. No new cases were reported following this.

Similar conditions were found in several of the other intermediate schools. It was planned to use these schools as "controls" and institute no form of treatment or cleaning. However, this plan was not

found possible since the school principals and health education directors employed the same methods as had been advocated for the school studied. A survey during June, 1927, showed very few cases in any of the schools of the city. We feel justified in advocating this system of rigid inspection, exclusion and cleaning floors wherever plantar warts and ringworm of the feet are found. The regulations mentioned above hold the swimming instructors responsible for the condition of the bathers and the conduct of the classes.

The pool operator is held responsible for the swimming pool sanitation so far as the maintenance of the pool and physical equipment are concerned. He must see that all equipment is in good working order, that the pool is properly skim-flushed and free from sediment, that the sterilizing unit is properly operated, and that the pool room, shower rooms, and locker rooms are in a clean, sanitary condition.

The Department of Health is responsible for the collecting and examining of water samples and for the issuing of regular sanitary reports of the pools.

The Department of Health has recently adopted a new method of rating and reporting the sanitary conditions of the swimming pools. This method is based upon the bacterial results of the water samples collected at the pools and does not take into consideration sanitary inspections, as in our experience we have found that the bacterial results reflect fairly accurately the sanitary conditions and control of the bather.

Any method of reporting should reflect the possible danger which the bather assumes when he uses the swimming pool. No method of sanitary control can prevent the mechanical irritation of the pool water on the linings of the various audio, oral and nasal cavities. Chemical irritation can be prevented and should not be tolerated. Mass infection from one bather to the next is very hard to control, but properly constructed scum gutters and proper height of water help. Prohibitory measures to keep out all those infected and those suspected of being infected can do the most in this respect. By varying the hour, the day, and the place of sampling, and by collecting frequent samples, we believe that the bacterial results obtained are a good cross-section of the sanitary conditions of our swimming pools.

All swimming pool samples are examined for total bacterial counts at 37° F. in 24 hours and for organisms of the *B. coli* group. In determining the total counts we plant one plate each of 1 c.c. and 1/10 c.c. amounts. The *B. coli* determinations are made by running five 10 c.c. tubes and one 1 c.c. tube with confirmation on Endo's media. Formerly we examined a 1/10 c.c. tube in making the *B. coli* deter-

mination, but found that this only placed an added burden upon the laboratory. Of the 6,250 1/10 c.c. portions examined since January 1, 1928, only two were found positive.

It is our opinion that a percentage basis should be used for reporting series of bacterial results of swimming pool samples. After a careful study we believe that the sanitary standing of any swimming pool should be based upon two things: a percentage of total bacterial counts which exceed a given count; and the percentage of 10 c.c. portions which are found positive for *B. coli* organisms—giving equal weight to each. In determining the total bacterial count which should be used in the first part of this rating, we examined the data relative to some 18,000 samples of swimming pool water already analyzed by this department. After careful consideration of these data, the laboratory methods used, the personal equation of the laboratory technician and the relationship of these counts to the presence of *B. coli* organisms, we decided that a total bacterial count of 200 is reasonable and should be used.

In determining these standards considerable emphasis was placed upon the presence of organisms of the *B. coli* group. It would appear from all the evidence that has been presented that in a treated water supply the organisms of the *B. coli* group are much hardier than the common pathogenic organisms. We also believe that when a number of persons are using the pool this body of water will become contaminated with *B. coli* organisms. In view of the foregoing it appears reasonable to use *B. coli* as an indication to the pollution in a swimming pool. In selecting a total bacterial count of 200 colonies per c.c., considerable weight was given to the fact that counts of 200 or less were not often accompanied by positive *B. coli* determinations.

The following method of rating has been accepted. The percentage of the number of samples showing counts in excess of 200 and the percentage of 10 c.c. portions found positive for *B. coli* in any series of swimming pool samples are averaged arithmetically. This average figure is then subtracted from 100 and the result is called the sanitary rating for this particular swimming pool for the period covered by that series of samples. In order to eliminate the possibility of a swimming pool operator confusing the result obtained with a 100 per cent perfect grade, the resulting sanitary rating is multiplied by 10, thus making a perfect sanitary rating of 100 appear as 1,000.

The pools are given a comparative standing according to the sanitary rating obtained, alphabetical order being used where ratings are equivalent. In Detroit we have chosen a satisfactory sanitary rating to include all those pools whose rating is 900 or more.

In conjunction with the preparation of this method of reporting, a considerable number of studies regarding the sanitary conditions of the swimming pools were conducted. For instance in order to determine whether a presumptive or confirmed test should be used in *B. coli* determinations, an examination of all samples analyzed during the past year was made. In this we found that about 36 per cent of the 10 c.c. portions with a positive presumptive test confirmed. Therefore it was deemed advisable to use the confirmed test.

An educational program has been developed along two lines. In publishing the monthly sanitary ratings of the swimming pools, we have added a short story which is called the "Swimming Pool Review." In this we have attempted to tell in a simple way the story of the care of the swimming pool. Data obtained in our experimental studies have been reported and timely subjects regarding the pools have been discussed. A wide distribution of these reviews and reports has aided very materially in the instruction of both the bathers and the pool attendants. The comparative method of reporting the sanitary condition of the swimming pools has fostered a spirit of competition between them and aided considerably in improving their sanitary condition.

Classes for the instruction of pool attendants have been held several times each year. Here various members of the Department of Health give lectures and answer questions regarding the care of the pool and bather control. Classes of bathers have been organized with some degree of success. An attempt is made to teach the "Why" and "How" as well as the "Do's" and "Don't's." Whenever a swimming pool operator has difficulty with his pool, someone from the Department of Health who understands the operation of the equipment visits the pool and goes into detail with the operator concerning his difficulties. The various equipment concerns have given us considerable aid in unsnarling kinks which have developed.

When a new instructor or engineer is hired the Department of Health has to give him the necessary instruction for his position. The Board of Education and the Department of Recreation have aided very materially in the instruction of persons employed by their departments. One of the most recent developments in Detroit has been the acceptance of the "Swimming Pool Regulations" by the Civil Service Commission. In the future all candidates for positions as attendants or operators of swimming pools will be asked questions taken from these regulations. This will to a considerable extent relieve the Department of Health of the difficulties we have experienced whenever a new man is put in charge of a pool.

About a year ago in a revision of the Plumbing Code the following section was added:

Section 10—For the purposes of this code a swimming pool shall be considered as a special fixture. No swimming pool, either public or private, shall hereafter be installed or altered, or the plumbing, water supply, or piping in connection therewith be installed or altered except upon the written approval of the Health Officer. Complete plans of all swimming pools including accessories in connection therewith must be approved by the Health Officer before any construction or alteration is undertaken.

Basing our requirements upon the defects of the pools already in use and following the suggestions of the Report of the Joint Committee we have developed some tentative requirements for new construction and alterations. Here are briefly some of the requirements:

1. The design of the locker room, shower rooms, and pool room shall be such as to give proper routing of bathers and complete separation of bathers and spectators.

2. The pool shall be completely surrounded by a walk way at least 4′ in width.

3. A scum gutter shall go completely around the pool and must be at least 6″ wide and 6″ deep with outlets not less than 2″ in diameter every 10′.

4. All circulating inlets must be valved and at least one inlet provided for every 20′ of perimeter of the pool.

5. Circulating outlets must be placed in the deep portion and on the bottom of the pool. In pools of 20′ or more in width two or more outlets are required.

It seems desirable to give the results of some of the tests that were made on one of our pools that has been in operation for some time. This pool is 25′ wide by 75′ long and has four inlets in the shallow end and two outlets in the deep end. The pool has a theoretical turnover period of about 9 hours. When the free chlorine was maintained in the shallow end of the pool below 0.5 p.p.m. the deep end of the pool showed no residual and had high bacterial counts. By increasing the free chlorine in the shallow end of the pool, we were able to find a residual in the deep end. These tests were made while the pool was in use. In other words by maintaining excessive amounts of free chlorine in the shallow end of the pool for the non-swimmers and beginners we were able to get good conditions in the deep end of the pool for the swimmers and divers. This of course is an extreme condition, but one that we hope to remedy in future pools.

6. Cross-connections between city water supply and pool circulating systems are allowed only where double checks and vacuum relief are used. No cross-connections are allowed between the pressure circulating line and pool supply line. All connections must be made on the suction side of the circulating pump. This means that the circulating pump must be used for back washing the filters.

7. Gages must be provided for showing the loss of head through the hair strainer and the filters.

8. All pools should be equipped with a suction cleaner and where such a cleaner is provided the discharge of the same must go to the sewer.

9. Rate indications must be provided on all circulating systems.

10. Thermometers must be provided on pumps suction and heater discharge.

11. All pipes must be painted distinguishing colors.

12. The theoretical period of complete turnover must not exceed 8 hours.

13. The rate of filtration for pressure sand filters must not exceed 3 gal. per sq. ft. per min.

14. Wash water must be provided for pressure filters at the rate of approximately 12 gal. per sq. ft. per min.

15. Where chlorine gas is used, it is necessary to install the chlorinator and tanks in a special closet with vent to the exterior of the building.

16. Liquid chlorine apparatus shall be so located with reference to exits that it will be possible to leave any parts of the building without passing the chlorinator.

17. Where chlorine is used as a sterilizing agent, an orthotolidine testing set must be provided.

18. On pools over 100,000 gal. capacity solution tanks and orifice boxes must be provided in place of the "alum pot." The alum solution may be injected into the pump suction.

It is to be understood that this is only a brief summary of the requirements and is quite incomplete. In fact our regulations are incomplete at the present writing, but it is hoped that they can be put into at least tentative form in the near future.

The steady growth in the number of pools in Detroit and the increase in attendance of our pools point to the growing faith of the public in accepting the swimming pool as a safe, clean place for recreational swimming. As the attendance increases, keener vigilance must be kept by all in charge of the operation and use of our swimming pools.

No attempt has been made in this paper to compare the sanitary standard as set up in Detroit with that proposed elsewhere. We believe that a standard even as stringent as that for drinking water should be the goal, and therefore have set our aim for a perfect rating as: (1) no total bacterial counts in excess of 200; (2) no *B. coli* (confirmed test). We realize that at present we cannot expect our pools to operate continuously to this high standard and so in accepting a satisfactory rating of 900 have made some allowances. By merely raising this rating we automatically raise our standard for a satisfactory pool and in no way affect our standard for a perfect pool.

What Preparation Should the Public Health Nurse Have for Rural Work*

I. MALINDE HAVEY, R. N.

Assistant Director, Public Health Nursing Service, American National Red Cross, Washington, D. C.

THIS paper presents the composite thinking of the leaders of rural nursing throughout the country as given in answers to a questionnaire which was sent out to state directors, Red Cross Nursing Field Representatives, and others who are responsible for approximately three-fourths of the entire field of rural nursing in the United States.

Before we can consider what constitutes adequate preparation for the rural nurse we must know what she is prepared for, or in other words, what she must be able to do. This was the first question submitted. The replies are enumerated as briefly as possible:

Teach all ages and kinds of people.

Enter into the community life and be sympathetic with it.

Organize committees.

Coöperate with the medical profession.

Coöperate with health officers and other public officials, such as teachers, superintendents of schools, county board of supervisors, and boards of education.

Speak in public in a convincing way about her work, and be ready and willing to do so at all times.

Handle emergencies.

Analyze the results of her work and evaluate them.

Plan ahead systematically for a progressive program.

Maintain good nursing technic at all times.

Keep accurate records.

Give publicity to her work through newspapers and other agencies.

Work coöperatively and intelligently with other voluntary agencies in the field and be able to use their resources effectively and economically.

Help diagnose the community needs.

Have courage, persistence, perseverance and the ability to win the confidence of her people.

Drive an automobile over all sorts of roads and in all sorts of weather, and be able to change a tire, if necessary.

Have knowledge of normal home and child life.

Have ability to share responsibilities with others and delegate work to them.

* Read before the Public Health Nursing Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 4, 1929.

Wield real influence without aggressiveness and lead without officiousness.

Think clearly, and write lucidly.

Make herself socially acceptable to the best people of the community.

Withstand hardships of travel, weather and living conditions cheerfully without considering herself a martyr, yet observing at all times a well balanced sense of value.

Keep herself constantly informed of the latest developments in public health nursing and other public health measures.

Last, but not least, be able to face disappointments with courage, sense the ridiculous and enjoy it.

This probably does not exhaust the things the rural nurse must be able to do, and one cannot but wonder if there is a human being on earth of whom more is expected.

In the light of what the rural nurse has to do one naturally asks—"What contributes most toward her ability to meet these diverse and multiple responsibilities?" Again I quote from the answers to the questionnaire in which my colleagues were asked to select 5 out of 15 important *factors* that would contribute most toward helping the nurse meet her responsibilities:

1. Good home bringing up
2. High school graduation
3. College graduation
4. Graduation from good nurses' training school
5. Staff work on good city V. N. A. under supervision—Minimum time
6. Staff work on good municipal health department under supervision—Minimum time
7. Staff work on good city school nursing service under supervision—Minimum time
8. Experience on city or town V. N. A. *without* supervision—How long?
9. Experience in county nursing *under* supervision—How long?
10. Experience in county nursing *without* supervision—How long?
11. Postgraduate course in public health nursing in accredited school—Minimum length of course
12. Private duty experience
13. Institutional experience
14. Good physical and mental health
15. Personal grooming

It was rather interesting and significant to note that good physical and mental health led. We can only agree that it should, since in order to be able to teach health one certainly must possess it and live it, to be able to carry the load.

Second in importance came the postgraduate course in an accredited school of public health nursing, the majority believing that 4 months should be the minimum. This is both practical and sound.

Graduation from a good nursing training school ranked third.

One naturally assumes that this is backed by a high school education which, about one-half of the questionnaires pointed out, was one of the essential requirements.

Good home bringing up took fourth place in total votes, although it received more first votes than any other. To me, it leads in importance since good home bringing up as a rule means sound character. Is there any requirement more important in our rural nurse, and is there anything that contributes more to her general ability to meet her responsibilities?

Experience in county nursing under supervision took fifth place. The minimum for this varied but the majority favored 1 year.

Being a high school graduate ranked sixth, and personal grooming seventh. One contributor stated that personal grooming could be overdone. We wonder if she meant the too generous use of the lipstick or the application of rouge in a poorly lighted room! Seriously, personal grooming is an outstanding quality. Sloppiness is an unattractive trait which often overshadows other good qualities.

Turning to a more detailed scrutiny, the following question was asked:

> Do you believe a 4 months' public health nursing course in an accredited school with no experience other than the practice work in the course *better* than 1 year of experience on a V. N. A. staff under daily supervision? If so, why?

Over one-half favored the 4 months' course, feeling that it gives the nurse more fundamental instruction and general background in that she receives practical help on organization and method plans, stimulates her thinking, gives her an attitude of mind to see the work as a whole, especially in regard to organization, resources and program, enhances her opportunity for progress, increases her standing and prestige in the community, gives her confidence, and creates in her a desire to seek further assistance so that she may develop her work more intelligently; whereas, experience on a V. N. A. staff would be narrowed down to that particular organization which might be of little help to her in another town or state.

Those preferring a year of experience on a V. N. A. staff under daily supervision rather than a course felt that nothing is better than actual experience since it gives the nurse a chance to develop initiative and ability under close supervision. They felt actual experience assists her to visualize family health and social problems and develops her confidence and technic in handling them. Best of all, since she has an opportunity on a V. N. A. staff for selective reading, lectures and round table discussions she gets both theory and practice combined in their best relationship.

Some felt that a 4 months' course was far too short a time for a nurse to find herself in the public health field.

These various opinions are given for your consideration. The majority favored the 4 months' theoretical course. I think the conclusion one would draw here is that none of those favoring the V. N. A. would select it unless that V. N. A. had an educational director, or certainly a well developed staff education program. Just routine experience on a staff, it seems to me, cannot compete with a 4 months' course in public health nursing in an accredited school.

The above is the minimum. We all recognize fully that additional experience or theory is highly desirable.

Many of us who are responsible for the employment of public health nurses in the rural field are often perplexed when a promising applicant comes to us without public health experience and with little money. Therefore, the following question was submitted:

> If you had an intelligent nurse with good basic training but with neither experience nor special training in public health nursing and who could not afford to take a course in public health nursing, how would you plan a minimum yet satisfactory and adequate preparation to fit her for a rural position where she would be the lone nurse?

The replies were relatively uniform. One-half favored experience on a good V. N. A. staff under daily supervision where regular staff education is provided, the other half felt that experience under supervision in the *rural field* was desirable, the minimum time for this being 1 year. Some of the replies are quoted:

> One year on a good V. N. A. staff. Suggest certain good books and magazines to study.
>
> If possible, persuade her to accept a position on a good V. N. A. staff or a municipal health department for a year where she would have the advantage of close supervision and a staff educational program.
>
> A year, preferably 2, on a V. N. A. staff under good supervision and a 6 weeks' summer course in public health nursing.
>
> I should think at least a year of experience in county nursing under the best of supervision, and supplementing this with a course in reading, would be desirable even for an intelligent nurse with good basic training.
>
> Suggest 8 months or a year on large city V. N. A. staff, or place her under a capable and well qualified nurse in a rural area to work as second nurse and urge reading course and lectures, if available.

Several suggested that with scholarships now available it is possible for nurses to secure public health courses. Personally, I am of the opinion that if the nurse cannot afford to take the course we shall need to call upon our good friends in the well established V. N. A. services to take on some of these desirable applicants.

The Community Health Association in Boston offers to take on graduate nurses, who are also high school graduates, for a year, on a salary of approximately $115.00 a month. The Community Health Association arranges with Simmons College to give 4 months of theoretical work. Here the nurse receives excellent experience, a certain amount of theoretical training and in addition draws a salary sufficient for maintenance. Who would ask for a greater opportunity? I am confident that other V. N. A.'s would follow the Boston plan if urged.

Several suggested that an attempt be made to place the nurse in one of the health demonstrations. One or two state directors of public health nursing suggested that the field base training station is a means of giving the necessary preparation. Several felt that it was useless to attempt to improvise a field training in lieu of the regular courses. The principal conclusion seems to be that everyone desires the nurse to have training and experience before she is placed in a rural position.

The following question was asked under Personality:

If you had to choose between a nurse—

1. With good public health training or experience but lacking in personality, and one

2. With insufficient public health nursing training or experience, but with excellent personality and good general background, which would you take?

The replies were all for the nurse with personality as against the one with training, except one which stated that nothing could compensate for proper technical training. Four reasons are quoted:

She can secure training but it is awfully hard to make over personality.

Because a nurse with a pleasing personality can be trained by experience and would eventually gain the confidence and support of the public as well as the professional people. She would also no doubt be willing to study as she went along.

In my experience in rural communities I have noticed that when they are looking for a nurse, there is nothing on which they put more emphasis than that the nurse should have a pleasing personality. If she does not have that, too often the community will not even give her a chance.

In my experience with rural nurses, I have learned that the nurse with a poor personality can ruin a service much more readily than the one who lacks the professional requirements.

The next personal item was age, and again I resort to the replies to the following question:

Do you think age should be a guiding factor in selecting nurses for rural work?

Two-thirds answered "yes." There were, however, a variety of opinions. Approximately one-half favored the younger nurses as being—flexible, enthusiastic, usually attractive, healthy, adaptable, able

to endure hardships, more adventuresome, and on the whole more alert and willing to learn; whereas, the older person is apt to be settled, inelastic, irritable, frequently in poor health, and unwilling to put up with hardships.

Of those favoring the older person, more than forty said that the young nurse cannot gain the confidence of parents; that she lacks judgment, experience, self-confidence, vision, executive ability; finds rural life too lonely; does not possess resources within herself; is frivolous, unstable, restless and impatient with slow results.

It was gratifying to note that while the desirable age might be from 30 to 45 years (I am certain this will be consoling to us old-timers), the majority felt that, after all, age, as such, is not the point. It is rather the qualities the nurse possesses regardless of age that count. We know that there are old nurses possessing the desirable qualities of youth and young nurses with mature qualities, so that, after all, it is health and personality that count rather than years.

The next question was:

Should the nurse for rural nursing be required to have a health examination before assignment?

All the replies were "yes" with one exception. It was interesting too that six of the state directors answering the questionnaire required a physical examination, while the majority of the others strongly advised it. Of course, we all realize that health examinations can be a farce. If, however, they are carried out for the purpose intended, then I believe the time is ripe when this shall be a requirement for the rural nurse. The examination is a protection to her and the organization which employs her. Certainly, we cannot urge periodic physical examinations if we, ourselves, fail to appreciate their value.

The last question was:

Should the rural nurse be required to wear a uniform?

Twenty-nine out of 33 replies said "yes." Two said "no" and two replied that it was preferable. One terse reply, I felt, rather covered it all.

Hospital nurses and private duty nurses wear uniforms, don't they?

So far as the uniform is concerned, I am a strong advocate for its use in that I believe it is a protection to the nurse and the family, and gives a certain prestige to the nurse and publicity to the work. Any nurse who refuses to wear the uniform, in my estimation, has lost the real spirit of nursing.

In concluding this paper I want to say that it is nothing more nor

less than a composite of ideas which have been collected from those who are thoroughly experienced in the rural nursing field.

When one recapitulates all that the rural nurse has to do he can only conclude that she needs to be a paragon in all virtues and wisdom. To achieve this state of superexcellence she needs a public health nursing course for the broad comprehension it will give her and the sound grounding of principles quite as much as she needs experience of some length under close supervision for the understanding of family problems and wisdom in dealing with human nature she will acquire; she needs health; but most of all she needs good sound character and that elusive and indefinable but absolutely essential qualification—personality.

A course will do without experience; good experience will do without a course. Each has values the other has not. But of the three things, theory, practice, personality, the greatest of these is personality.

Shall We Eliminate the Use of the Tongue Blade?

IN the inspection of the throats of school children by the school nurse, it is desirable to have the matter attended with as little unpleasantness as possible. Some children recoil from the nurse; a higher percentage recoil from the tongue blade ordinarily used for inspection, and the reactions vary from complaining to actual struggling, gagging and occasionally vomiting.

We have found our work has been much expedited by the elimination of the tongue depressor. In the greater number of cases, the results have been satisfactory.

Inspection without a tongue depressor is satisfactorily accomplished by having the child throw back the head and take a fairly deep breath—always having the head back first. Ordinarily, the request to "breathe deeply" is accepted by the child as a challenge to demonstrate the total chest expansion, and is followed by a violent inspiratory effort in which the accessory muscles of respiration are thrown into play—the sterno-mastoids stand out like cords, the tensed platysma becomes rigid with effort, and especially among boys the chin is pulled down on the neck in the most military of poses—which crowds the soft parts of the floor of the mouth upward so that the tongue completely obstructs the view of the pharynx.

With the head back, the mouth is usually opened a half to a full cm. wider, and, with a moderately deep inspiration, the posterior portion of the tongue is depressed sufficiently to give good exposure of the pharynx, so that ordinary tonsillar pathology is readily seen. A more detailed inspection may be made if indicated.

Nurses may consider the use of the tongue blade from two angles—the psychological or economic.

While making about 7,000 inspections of rural school children and about 3,000 inspections of city school children, the writer only used about 200 tongue blades—and they were used mostly on nervous children.—Olive B. Marty, R.N., F. A. P. H. A., Supervisor Health Education, West Frankfort City Schools, West Frankfort, Ill.

Bacteriological Control in Commercial Canning*

E. J. CAMERON, PH. D., AND H. M. LOOMIS, F. A. P. H. A.

National Canners Association, Washington, D. C.

THE application of scientific methods to the preservation of canned foods has been largely a development of the past ten or fifteen years. It is the immediate result of studies of sterilization or "processing" based on the work of earlier investigators and conducted by the Research Laboratories of the National Canners Association and other laboratories connected with the canning industry. Intensive studies of this subject, which are still in progress, date back to 1918. An important landmark must be recognized in the work of Barlow, who, in 1913, studied thermophilic spoilage for the first time. His studies led to the realization that spores of some "obligate" thermophiles are of such high resistance as not to be killed by any practicable canning process and that adequate cooling must follow processing in order to prevent germination of these spores, which may cause spoilage in canned foods only at temperatures above 37° C.

The recognition by early workers of the biological nature of canned food spoilage was of practical importance. It showed the necessity for scientific investigation of the sterilization processes used in canning, which previously had been entirely empirical. It led to a stimulation of interest in this field of food preservation and established the fact that the heat applied during the process was, and always would be, the indispensable element in preventing spoilage of canned foods.

However, the mere scientific statement that microörganisms were responsible for food decomposition gave nothing capable of direct, practical application and suggested no immediate technological improvements in canning. It was, in fact, many years after the foundation of the science of bacteriology that the biologist was able to be of any real assistance to the canner in the questions which confronted him.

The inevitable result was that processes necessarily developed

* Read before the Food, Drugs and Nutrition Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 4, 1929.

through trial and error; "rule of thumb" procedure prevailed; reliance was placed upon the experience of so-called "processors," and when spoilage occurred, it was followed blindly by an increase in the heating process.

These "rule of thumb" methods were referred to contemptuously on many occasions, scientific control, of course, being suggested as the proper substitute. But for years attempts toward establishing scientific control did not help a great deal, except perhaps to suggest the need for studies of the specific problems of the industry. Speculation, strained reasoning by analogy, and superficial experimentation were subject to the same criticism as the old processing methods and implanted some erroneous ideas that persist even now.

The organized processing studies, already mentioned, represent the first continuing and intensive effort to define adequate processes for canned foods. The primary requirement was to establish time and temperature relationships which would result in killing spores of *Cl. botulinum* and earliest efforts were directed toward that end. This was a coöperative effort, supported by the National Canners Association, in which the assistance of the research staffs of four universities was enlisted.

Secondarily, the plan was to determine processes which would protect against spoilage by bacteria which are non-pathogenic, but more resistant to heat than the spores of *Cl. botulinum*.

In furtherance of this work, the rate of heat penetration into various canned foods was determined through the use of a thermocouple, modified and adapted to the purpose in view. A parallel study dealt with the heat resistance of bacterial spores isolated from spoiled canned foods. This required the development of original methods of procedure, inasmuch as previous heat resistance work had largely dealt with non-sporulating bacteria and available methods were inadequate for testing the resistance of highly-resistant spores.

Mathematical formulas were developed in order that the heat penetration and heat resistance data might be correlated and interpreted in such terms as would permit of technical application. By that means, theoretical laboratory processes were deduced. These were then checked under commercial conditions by means of experimentally inoculated packs of the various canned foods. Finally, the recommended processes which were scientifically proved to be adequate were put in the hands of all canners.

The general spoilage problem which, in non-acid vegetables, arises largely from the activity of thermophilic bacteria, required special treatment. These bacteria, by reason of the great resistance of their

spores, may in the event of high contamination resist any practicable process. To cover all possible situations, so severe a process would be required as to exert detrimental effect on the product. The use of recommended processes will prevent spoilage where only a moderate degree of thermophilic contamination exists, but may not be protective where contamination is unusually high.

That this would be the case was appreciated very early in the investigations, and it was realized that for this and other obvious reasons it would be fundamentally wrong to place total reliance on sterilization, without regard to the question of degree of initial contamination. The advantage of applying the proverbial "ounce of prevention," through reducing such contamination, was apparent. Toward this end, more had to be known of the types or groups of spoilage bacteria, their sources, and the reasons for marked fluctuations in contamination. Intensive work along these lines has been in progress during the past five or six years and has included classification studies, the development of selective methods of identification, and other considerations, more of which later.

In the spoilage of non-acid vegetables we now recognize four well defined bacterial groups which have a common characteristic, namely, the ability to form spores highly resistant to heat.

The spoilage bacteria most frequently met with are the "flat sour" bacteria. These are thermophiles which, as the result of growth, produce lactic acid without formation of gas. One sub-group is not capable of growth in canned foods at 37° C. or below, but has an optimum growth-range of from 50° to 60° C. Another sub-group is capable of active growth at 37° C. as well as at higher temperatures. (The type species is *B. stearothermophilus,* Donk.)

Secondary in importance are two groups of gas-forming thermophilic anaerobes, both of which have optimum growth temperatures between 50° and 60° C. The more important of these groups produces acid and gas (H and CO_2), which result in swelled cans. This group, which will grow in fairly acid foods, pH 4.2 to 4.3, is now being studied from the standpoint of classification.

The other thermophilic anaerobe is characterized by the production of hydrogen sulphide at relatively high temperatures (45°–55° C.). Due to the solubility of the gas and easy combination with iron contained in the canned product, there is no free gas formed and the can remains flat. The result is known as sulphide spoilage and is rarely encountered. The organism has been described by Werkman and Weaver and named *Cl. nigrificans.*

Of the four spoilage groups, the only one outside the class of

thermophiles is the putrefactive anaerobic group. Such spoilage is manifest by swelling of the container, and the can contents usually have a typical, putrid odor.

Field studies on the distribution of spoilage bacteria have followed those relating to classification and heat resistance. The main purposes of these studies have been to gain information relating to the sources of spoilage organisms, conditions under which they may multiply to such an extent as to constitute a processing hazard, and methods for keeping the initial contamination as low as possible.

This phase of study first dealt with the investigation of conditions which had led to spoilage in the packs of individual canners. For this purpose field laboratories were established at the various canning plants where spoilage had occurred. During 1926–1927 it was possible to study causes leading to all four of the types of spoilage referred to. The causes were defined, and remedial measures suggested which proved efficient. All information of technological importance resulting from these studies has been given to the canning industry generally, and suggestions have been made as to how this information could best be applied.

The outstanding results of these investigations may be of interest. In presenting these results, the three thermophilic spoilage types will be considered as one class, as distinguished from the putrefactive anaerobes.

The results show definitely that the development of thermophilic contamination takes place largely in the cannery itself. The raw product as it comes from the field, or subsequently, is not the source of such contamination. Many ways have been tried to induce growth of thermophilic spoilage types in the raw product, but with no success. Harvested corn may be held without access of air, until the enzymic reactions have produced a temperature in the corn of over 50° C. but, according to the data secured, the result is not an increase in thermophilic or other spores but a general decrease, and as would be expected a rapid increase in vegetative forms.

This is contrary to the old but still prevalent idea that when under certain conditions of holding the corn or other raw product would heat, thermophilic bacteria would multiply and for some reason sporulate.

There is no question as to the adverse effect on quality of holding the raw product, but in our experience, where spoilage is due to this cause, the material is spoiled when it enters the can and the holding cannot account for spoilage which occurs subsequent to the process.

On the other hand, certain cannery equipment, such as wooden brine tanks, blanchers, and cookers, are likely to become contaminated

with thermophilic bacteria, which may cause spoilage of the canned product.

Refined sugar has proved to be an outstanding source of thermophilic spoilage bacteria. Sugar is the only ingredient of canned foods in which we have found spores of such bacteria with any degree of frequency. Usually this sugar contamination will not directly cause spoilage but it may result in inoculating the brine tanks or other equipment, where subsequent development may result. In one instance, we have evidence that sugar, highly contaminated with sulphide spoilage bacteria, was directly responsible for substantial loss. All three types of spoilage thermophiles have been found in sugar, but there is no apparent correlation between such contamination and the nature of the raw product (beet or cane) or the degree of refinement. We wish to emphasize the fact, however, that this thermophilic contamination of sugar is not a factor in spoilage in acid products like fruits or tomatoes, since the acidity prevents development of the spores.

No relation has been found between thermophilic spoilage or thermophilic contamination and sanitary conditions in the cannery. It is interesting to note that the same statement has been made with regard to the development of thermophilic contamination in pasteurizing equipment.

Spoilage by putrefactive anaerobes is relatively rare, and, unlike thermophilic spoilage, it may have some relation to sanitary conditions. Where we have studied this type of spoilage, it has resulted through the presence of spores in such things as conveyors and baskets made of porous materials. Soil is considered the source of these bacteria.

The most recent progress in spoilage control is based on prevention. Methods of examination have been developed by which products may be tested during the packing season and the canner told whether there are sources of infection in his equipment.

The methods which are used are selective and vary in reliability. The test for flat-sour bacteria is both practicable and reliable. The colonies are easily recognized and readily counted and are not to be confused with the usual soil-borne thermophilic types. The test for sulphide-spoilage bacteria is striking and is easily applied under field conditions. Colonies can be counted since they appear as intense black spots in the deep medium. The test for gas-forming thermophilic anaerobes is not so satisfactory since these types possess to a marked degree the peculiar property of delayed germination and we have been unable to prepare an ideal medium for their growth. Tests for putrefactive anaerobes are also subject to the limitation imposed

by delayed germination and are therefore largely qualitative. With these last two organisms, counting must be done by the method of dilution.

The problem has been to apply these routine methods of examination over a wide range of territory. A field laboratory has, therefore, been installed in a motor truck which has been in operation for two years. In the summer of 1928 more than 100 mid-west canning factories were covered, and during 1929 a somewhat less number were visited in eastern states.

This truck laboratory is located at central points, samples are collected from surrounding factories, iced and brought to the laboratory. Certain samples are taken from cans just after they have been sealed and before they are processed. These cans give a picture of what has taken place in the cannery in the way of infecting the food. Other samples are taken from various "key" points, such as the brine tanks, conveyors and blanchers, so that if contamination in the canned product is higher than it should be, the source may be traced.

The results of the work have thrown much light on the general subject of sources and methods of contamination and have been of value to individual canning organizations. While, up to the present time, most of the work has been done with canned peas and corn, it is being extended to other products.

While much emphasis has been laid in the past on the need of sanitary inspection of food factories, these studies have shown that something more than a superficial examination of canneries, raw materials and equipment is necessary to insure against spoilage. Canners are realizing more and more that bacteria are their chief enemies, and to keep them in check a bacteriological survey of the type above described is a great help.

Decline of Italian Birth Rate

ACCORDING to reports of the Istituto Centrale di Statistica, the number of births in Italy in 1929 was 1,035,866, or 32,700 less than the preceding year. The birth rate, which in 1928 was 26.08 per 1,000 population, dropped in 1929 to 25.09. The number of deaths in 1928 was 638,818 and in 1929, 660,609, an increase of 21,791. Hence, the mortality rose from 15.59 to 15.98. The excess of births over deaths was 357,257 in 1929, which signified a decrease of 54,491, as compared with 1928.

The Well Baby Clinic at the Office of the Family Physician and Pediatrician*

E. J. HUENEKENS, M. D.

Director, Infant and Preschool Work, Infant Welfare Society, Minneapolis, Minn.

WHEN the Minneapolis Infant Welfare Society was organized in 1910 for the purpose of conducting well baby clinics, the economic status of the parents was not considered, and any infant was welcomed. An intensive educational campaign was conducted so that parents might learn the value of such care. The number of new babies admitted increased each year until 1922 (see Table I), when, due partly to our own investigation (Table II) and partly to the protests of the organized medical profession, our policy of admitting all infants who applied was changed.

Thereafter parents earning $130 to $135 a month with only 1 child and no outstanding debts or obligations were not eligible but were referred to their family physician or pediatrician for well baby care. We feel that in the long run this is the fairest policy for an organization dependent on the Community Fund for support. Even though in some cases injustice is done to the individual infant needing well baby care—through unwillingness of parents to pay, or indifference of the physician to whom they are referred—we believe sound policy dictates that the private physician should perform this service, and that such cases should no longer be charged to the community.

In time the physician who is now ignorant of, or indifferent to, preventive well baby care will find himself obliged to give such service, especially as the younger medical graduates have received intensive training in this type of work. To open the eyes of this ignorant or indifferent type of physician is our greatest problem. Some quotations from physicians as reported by mothers to our nurses were:

"No need to bother with any doctor when the baby seems O. K."
"No need of physical examination."
"Clinic doctors are too fussy about babies."
"No use to come so often unless that baby is sick; I haven't time."
"Give him anything that agrees with him. Why experiment?"

* Read at a Joint Session of the American Child Health Association and the Child Hygiene Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 2, 1929.

TABLE I

NEW BABIES ADMITTED TO CLINIC

Year	Resident Births	Infant Mortality Rate	New Babies Admitted	Year	Resident Births	Infant Mortality Rate	New Babies Admitted
1912	6,953	75.2	200	1921	9,436	55.9	3,074
1913	7,124	85.3	371	1922	9,548	53.0	2,659
1914	7,189	83.4	629	1923	9,712	53.8	2,559
1915	8,522	71.1	1,014	1924	9,751	53.4	1,738
1916	8,778	82.4	1,362	1925	9,423	60.8	1,698
1917	8,660	71.6	1,407	1926	9,192	56.3	1,515
1918	8,689	72.0	1,722	1927	8,620	46.5	1,398
1919	8,133	64.6	2,321	1928	8,348	51.0	1,416
1920	9,182	65.2	2,735				

"Use your own judgment; if breast milk does not agree with the baby try some other kind of milk."

These remarks should show why many parents are unwilling to pay for service which does not give them the information and assistance obtained from the free clinics.

The following is a report of a survey made in 1921 by the Minneapolis Infant Welfare Society.

Group—This consisted of 100 cases discharged from Infant Welfare Clinics because the nurse felt that the income of the family was enough to provide for this care by private physician.

Purpose—To find out how many of these 100 cases have consulted private physicians as advised by the nurse.

Type of Wage Earner—This included professional men such as dentists, teachers, ministers; experienced business men such as department managers, salesmen, bank tellers, skilled mechanics, and tradesmen.

Salaries—Salaries range from $125.00 a month with 1 child, to $350.00 a month with 4 children. (Salaries alone cannot be taken as an estimate, as the number of children and expenses will vary with every family.)

Result—There were 38 mothers consulting private physicians regularly: 17 a family physician, 21 a pediatrician; 62 are not consulting any doctor.

Special Points—Sixty-seven mothers said that they had a family doctor; 26 had none; and 7 were doubtful. (By family doctor we mean a regular physician to whom the family would turn in case of illness.) Thirteen cases plainly showed the need of special care other than that received from the family doctor; 8 showed the family physician did not care to coöperate with the clinic doctor when the mother was referred to him. Five mothers said they wished to go to a pediatrician but did not like to offend the family doctor; 3 went a few times and said they found it too expensive; 3 felt that they must make payments on home and furniture and could not afford it.

A similar survey is now being made and should show a larger percentage consulting their physician, and also a better type of care being given by the doctors.

While the relationships of the infant welfare society and private

physicians are discussed in terms of our local policy, do not get the idea that it is a purely local problem; on the contrary, infant welfare societies all over the country are battling with the same difficulty, and the solution is yet to be found. However, I believe that the best answer is for the private physician to undertake this work. If some do it poorly at present, we must give them more time. The training of older physicians has been so exclusively in the care of the sick that even such obvious preventive measures as vaccination against smallpox and the inoculation with toxoid or toxin-antitoxin for the prevention of diphtheria seem unimportant and unnecessary.

In private practice, my associate and I give well baby care as follows:

The infant is brought to the office about once every month for the first 9 months; then every 2 months until 13 months old; every 3 months for the balance of the 2d year; and thereafter twice a year, up to school age. The baby is weighed each time and accurate record kept of gains or losses. For the first 6 months the mother is shown how to nurse her baby, and how to express her breasts if the supply runs short; if artificial milk is necessary exact directions are handed her.

In these days of comparatively simple milk mixtures it is not necessary to send a nurse into the home to demonstrate the preparation of

TABLE II

REPORT OF SURVEY OF ONE-TENTH OF ALL REGISTERED CASES
1922–1923

220 Cases

In 29 cases, 13.1 per cent, there was no income; either the baby was illegitimate or the father was unemployed

Income less than $100

51, 23.1 per cent, were in this class
33, 15 per cent, had 1 child
11, 5 per cent, had 2 children
2, 0.9 per cent, had 3 children
5, 2.2 per cent, had 4 or more

Income between $100 and $115

55 cases, 25 per cent, were in this class
29, 13.1 per cent, had 1 child
12, 5.4 per cent, had 2 children
6, 2.7 per cent, had 3 children
8, 3.6 per cent, had 4 or more

Income between $116 and $125

46 cases, 20.4 per cent, were in this class
26, 11.8 per cent, had 1 child
11, 5 per cent, had 2 children
6, 2.7 per cent, had 3 children
3, 1.3 per cent, had 4 or more

Income between $126 and $135

18 cases, 8.1 per cent, were in this class
8, 3.6 per cent, had 1 child
2, 0.9 per cent, had 2 children
4, 1.8 per cent, had 3 children
4, 1.8 per cent, had 4 or more

Income between $136 and $150

14 cases, 6.3 per cent, were in this class
2, 0.9 per cent, had 1 child
4, 1.8 per cent, had 2 children
3, 1.3 per cent, had 3 children
5, 2.2 per cent, had 4 or more

Income between $151 and $175

7 cases, 3.1 per cent, were in this class
1, 0.4 per cent, had 1 child
2, 0.9 per cent, had 2 children
3, 1.3 per cent, had 3 children
1, 0.4 per cent, had 4 or more

milk formulas. The mother is directed when to start orange or tomato juice for the prevention of scurvy, and when to begin cod liver oil or viosterol for the prevention of rickets.

During the second 6 months instructions are given as to cereal and vegetable additions to the diet, so that by the time the infant is 10 or 12 months old, it is on three meals a day, and a fairly well mixed diet. During this time the baby is vaccinated and given toxin-antitoxin, the latter followed in 6 months by a Schick test. Through the 2d year the diet is expanded so that by the end the child is receiving all digestible foods in varied preparations.

For the 1st year the charge for this service if given regularly is about two-thirds of the fee for the casual office visit.

During the entire 5-year period mental hygiene instruction is given. The too indulgent or sympathetic mother, the over-stern father, and the nagging parents are dealt with by personal talks and by the required reading of simple popular books on child training, such as Thom's *Everyday Problem of the Everyday Child*, and Blanton's *Child Training*.

Conflicts in methods of discipline between parents are ironed out with varying success and sane sex instruction is urged. The trying problem of anorexia or poor appetite is explained in all its ramifications and early preventive measures along the lines suggested by Aldrich are undertaken. We feel very strongly that proper mental hygiene instruction undertaken very early and carried on through this entire 5-year period will prevent many serious problem cases of later years.

This is a rough outline, and we believe if this program is thoroughly and intelligently carried out preventive well baby care can be given fully as well by the private physician as by the infant welfare clinic.

Development of School Hygiene in France

CONSIDERABLE progress has been made in school hygiene in France in recent years. All the new schools built in the last decade comply with the requirements of hygiene. Through the efforts of a private society, " l'Hygiene par l'Exemple," one well equipped school is built in each department to serve as a model. The improvement is particularly noticeable in Paris and the other large cities where the new schools have large windows, electric lights, hot water heat, and other modern improvements.

Physical examinations of school children are given in Paris and other cities. A bill requiring such examinations throughout the country has been pending in Parliament for some time. School nurses are employed in Paris, and courses for their training have been established. A considerable number of open-air schools has been established.—*Pro Juventute, Zurich,* May, 1930, p. 188.

Waterways Pollution*

THE Conference of State Sanitary Engineers requested its Committee on Sanitary Conservation of Water Resources to submit a report proposing the elements of a model statute for the purpose of conserving water resources.

The committee did so at the meeting of the Conference in Chicago in October, 1928; it was discussed, revised, resubmitted and finally unanimously approved by the Conference.

The Committee on Sanitary Engineering included in a report submitted to the Conference of State and Provincial Health Authorities of North America at its meeting in Washington, D. C., on June 1, 1929, the aforesaid report as approved by the Conference of State Sanitary Engineers, and the Conference of State and Provincial Health Authorities of North America endorsed the principles set forth in said report.

The Committee on Waterways Pollution of the Public Health Engineering Section, American Public Health Association, deems this subject of such importance that the following report is practically identical with that approved by the Conference of State Sanitary Engineers in 1928, and endorsed as to principles by the Conference of State and Provincial Health Authorities of North America in 1929.

The Public Health Engineering Section is composed of engineers engaged in public health work and hence it is postulated that this section looks upon such statutes first for the protection of the public health; second, for the promotion of the public health and the general welfare.

Such statutes to be worth while must be practical, capable of enforcement, intended simultaneously to protect and improve streams, and not place undue burdens upon municipalities and industry. The expenditure of public and private moneys must be kept at a minimum compatible with benefits to the public derived therefrom. The demands of the public for proper expenditure of public funds generally exceed the moneys available from bond issues and taxation. The cost of manufacturing finished goods from raw materials of necessity must include the cost of industrial waste disposal and this is passed on to the consumer. Therefore, in considering statutes and their en-

* Report of the Committee presented to the Public Health Engineering Section of the American Public Health Association at the Fifty-eighth Annual Meeting, October 3, 1929.

been established.—*Pro Juventute, Zurich,* May, 1930, p. 188.

forcement the very hard facts of the economics of the matter cannot be overlooked.

In consideration of the above the following broad, general, fundamental ideas on legislation are submitted.

PURPOSE OF STATUTES

1. To protect now clean waters against menace to the public health and otherwise so far as is compatible with public interests and urban and industrial development.
2. To improve the sanitary condition of waters now more or less polluted.
3. To render waters increasingly useful to the public as
    a. Sources of present and future public and municipal water supplies
    b. Sources of water for industry and agriculture
    c. Places for recreation in suitable locations

SCOPE OF STATUTORY JURISDICTION

1. Sewage disposal and public sewerage
2. Industrial waste disposal
3. Pollution of waters arising from the development of natural resources

ADMINISTRATION OF STATUTES

As the first and highest use of water is for drinking purposes and as pure drinking water is an essential to the protection of the public health, it is obvious that the administration of such statutes should generally be vested in the state department of health.

In some states local conditions may indicate the wisdom of creating a board or commission to administer such statutes.

As the problem of sewage disposal, sewerage systems, industrial waste disposal, the design and operation of treatment works and the study of the sanitary conditions of waters all involve engineering and its underlying sciences such as hydraulics, chemistry, bacteriology and biology, the department of health or the board or commission must have the services of an adequate bureau of engineering to study projects, conduct investigations, and make reports and recommendation on the manifold and diverse questions which arise. Of much moment is the need for adequate appropriations to finance such work.

GENERAL POLICIES

The statutes should provide for the submission of plans, relevant data and reports to the state authorities as to existing and proposed

1. Sewerage systems
2. Means of sewage disposal (including treatment works)

3. Sources, nature and amount of industrial wastes together with means of disposal (including treatment works or admission to sewer system)
4. Means of disposal for pollution arising from development of natural resources

Upon receipt of such data an engineering study and, if necessary, a field inspection should be made thereof to determine:

1. Compliance with sound engineering practice
2. Practicability and feasibility of the project
3. Sufficiency of the existing or proposed means of disposal or degree of treatment adequately to protect public interests in the use of the receiving body of water

If the project be found satisfactory the statute should empower the state authorities to issue to the applicant a formal permit:

1. Approving the plans or project " as is " or with such modifications as are deemed necessary
2. Stipulating the conditions under which the discharge is permitted or the works are to be operated

The statute should vest in the state authorities full jurisdiction over:

1. New or increased discharge of sewage
2. New discharge of industrial waste or increase in the pollution strength of existing discharge of industrial wastes
3. New pollution arising from the development of natural resources

It should vest in the state authorities discretionary police power in cases where existing discharge of sewage or industrial waste is demonstrated to constitute a menace to the public health or prejudicial to public interests.

IN RE SEWERAGE

Municipalities of sufficient size and population to warrant it should prepare, adopt and submit for approval to the state authorities a comprehensive sewerage plan to show at least:

1. All existing sewers
2. Proposed sewer extensions in those parts of the town site for which there is a city plan
3. Estimate of future rate of flow from now undeveloped parts of the town site in order that the main sewers and works of the comprehensive plan shall have adequate capacity
4. Studies as to the practicability and advisability of admitting sewage from outside the town but originating on the same drainage area
5. The admissibility " as is " or with preliminary treatment of industrial wastes to the public sewer system
6. Intercepting and outfall sewers to convey sewage to a suitable site for disposal or treatment
7. Where sewage is to be treated, plans of the necessary first units and general

outline plans sufficient to show the feasibility of extending the capacity of the works or providing for more refined treatment if and when needed

The statutes should enable municipalities to do the following:

1. Exercise the right of eminent domain to acquire land or rights needed for the construction of sewers, treatment works and appurtenances.
2. Issue bonds and create sinking funds to finance construction.
3. Assess the cost of main and branch sewers against abutting property owners.
4. Charge sewer rental to finance the operation, maintenance, enlargement or betterment of treatment works and appurtenances.
5. Establish a special sewerage fund by taxation or annual appropriation for the sole purpose of building and maintaining main sewerage systems and treatment works.
6. Enter into agreements with contiguous or neighboring municipalities for conveyance and disposal of sewage or for the joint construction, maintenance and operation of sewers, treatment works and appurtenances and for the equitable distribution of the costs thereof and for joint management of the commonly used works.

IN RE INDUSTRIAL WASTES

The statutes should empower the state authorities to take care of the following:

1. Order the installation of industrial waste treatment works in cases where "reasonable and practicable ways and means" are known and where the lack of such installation results in pollution of the receiving body of water which constitutes a menace to the public health or is prejudicial to public interests.
2. By themselves or in coöperation with industry, conduct investigations concerning industrial wastes, their treatment and disposal in cases where there are not now known "reasonable and practicable ways and means" for treatment and disposal.
3. Make scientific studies to determine the sanitary condition of water resources and their present and probable future uses to serve best the public interests.
4. Allocate water resources for various public uses so as to bring about the best and highest utilization of the several streams, lakes and parts thereof.

IN RE DEVELOPMENT OF NATURAL RESOURCES

There should be statutory authority vesting in the state authorities discretionary powers to regulate and control, so far as is reasonable and practicable, the pollution of water resources arising from the development of natural resources so as to foster simultaneously the utilization of mineral wealth and protect the streams draining such regions.

Factories can be located in suitable places, but mineral resources must be developed *in situ*.

ADMINISTRATION AND ENFORCEMENT

Such statutes, powers and duties should be administered with even-handed justice to the end that the commonwealth, its municipalities, its citizens, and its industries are benefitted, not harmed.

To that end the state authorities should offer helpful counsel, lead the way, guide and direct rather than arbitrarily issue formal orders without considering the practicability of their being carried out.

However, when in the administration of the statutes it does become necessary to invoke the police power of the state and issue a formal order, it should be so worded and in such terms that, if not obeyed and the case comes before a court for adjudication, there will be no difficulty in the Attorney General proving to the court the justice and equity of the order so that it will be sustained even upon appeal.

No action should be started that cannot be successfully finished.

Fines and imprisonment for violation of such statutes may intimidate the smaller towns and corporations but in the last analysis they are merely punitive and the end result of the enactment and enforcement should be money spent on construction, rather than paid into a public treasury and the nuisance continued.

For wilful stream pollution from non-going concerns, as for example the heedless emptying of vats in an abandoned factory, or the discharge of unsaleable milk from a receiving station, a money fine is the only redress and acts as a deterrent to such a flagrant practice.

W. L. STEVENSON, *Chairman*
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F. H. WARING
L. F. WARRICK
A. H. WIETERS

Special Inspectors of Child Labor in Czechoslovakia

ON February 26, 1930, the Minister of Social Welfare of Czechoslovakia issued a circular to the factory inspection authorities in which he announced that a special division had been established in his ministry for better enforcement of the child labor law. The work is to be carried out by inspectors selected from the regular factory inspection staff. These government inspectors are to coöperate with the trade unions of young workers. The circular states specifically that the work of the new division will not be limited to the enforcement of labor legislation but will also occupy itself with other welfare problems of young workers.—*Lehrlingsschutz, Jugend- und Berufsfürsorge*, Apr., 1930, p. 22.

EDITORIAL SECTION

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

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PSITTACOSIS

PSITTACOSIS does not rank very high in order of numerical importance among the diseases acquired by man from the lower animals, but it stands second to none in interest from the scientific point of view.

The disease was recognized in 1879 by Ritter, who was not only a keen clinician but a shrewd observer, as he recognized the etiological significance of birds; since that time isolated cases, and more or less extensive outbreaks have occurred in most countries of western Europe as well as on this side of the Atlantic.

Our present interest springs from the epidemic which had its inception in the United States at just about the turn of the year. Many cases were traceable to parrots presented as tokens of Yuletide greetings, but they were, in fact, carriers of the disease to many, and of death to a few.

Approximately 150 cases have occurred, with 25 fatalities. It is a very safe assumption that the true figures of incidence and fatality would be higher than those given, since unless one has the clue (and recognizes it) in the shape of a bird, usually a sick one, the case will certainly pass as atypical influenza or atypical pneumonia. The newspapers have rendered excellent service in calling attention to the outbreak; indeed, without their aid, many cases, perhaps the majority of those reported, would have appeared in morbidity and mortality records under other diagnoses.

During the past few months the disease has attracted attention

in South America, England and Germany, as well as this country; in each it has taken its toll among those exposed.

Once the disease is suspected the clinical diagnosis is relatively simple. The onset with chill, headache, and fever without catarrhal symptoms is suggestive; when such manifestations are followed by physical signs in the chest indicative of pneumonia, but unaccompanied by the usual symptoms of that disease, with the symptoms insignificant or out of proportion to the physical signs, the diagnosis may be considered as established. Laboratory methods are of little value in diagnosis, save perhaps that a low leucocyte count speaks against pneumonia of the ordinary sort.

As to the bird carriers, parrots stand first, parrakeets (love birds) next, and it is believed that canaries are not beyond suspicion. The presence of a bird—sick or well—should serve to put the physician and the health officer on guard. The bird usually is decidedly ill and often dies, but cases have occurred from association with birds showing little or no evidence of illness. Usually a newly acquired bird is the source of infection, though this is not always true.

The research work carried out during the present epidemic seems to exclude Nocard's bacillus (a member of the paratyphoid group) as the cause of the disease and points to a filtrable virus as the essential etiological agent.

Of great importance and interest have been the laboratory outbreaks. Infections of research workers have accounted for the death of Dr. William R. Stokes, of the Baltimore City Health Department, and of Harry B. Anderson, of the Hygienic Laboratory of the U. S. Public Health Service. The most extensive outbreak was that occurring at the Hygienic Laboratory. Eleven cases occurred, only 2 of which were due to direct exposure to infected birds. The exact mode of infection in the remaining 9 cases is unknown.

It is evident that we have in psittacosis a disease demanding much research, but the fact that the research is especially hazardous will not deter those carrying on the necessary investigations.

From the point of view of public health procedure the problem seems very simple. The individual may protect himself by refraining from keeping parrots and certain other birds, or from exposing himself to them. In the present state of our knowledge, an embargo on suspected birds seems to be the only solution, from the point of view of public health authorities, national and local, and indeed, it is a question whether all birds of the susceptible group should not be considered as coming under suspicion.

WHAT IS THE SATURATION POINT FOR CITY NOISE?

THAT noise is unavoidable where people gather themselves together in communities is a fact as ancient as the man-made institution of cities and towns, but never before in the history of the world has there been such a constant clamor as is produced in modern cities or one made up of so many startling, alarm-like elements.

To a certain extent we can and do adapt ourselves to the conditions of noise, but common experience shows that there are limits to this adaptation. Everyone who has tried to sleep through the hum of after-theater traffic interspersed with nervous tooting of horns, through the rattle of milk delivery, through the clatter of ash collection—all the noises of a city night—knows that custom does not mitigate the annoyance caused by noise. Everyone who has tried to do a piece of work in the din of adding machines, typewriters, telephone bells and office conversation knows that he is disturbed by these things—at some times more than at other times, to be sure, but nevertheless appreciably disturbed. Business firms, realizing this disturbing effect of noise on workers, willingly spent over $3,000,000 last year in the attempt to dampen office noises and exclude street noises.

The researches of psychologists so far have been a confirmation of this common experience, usually revealing that noise has been more of a handicap to rest and to work than the average man ever suspected.

One question has not been answered in laboratories and it is doubtful if it can be answered there, where conditions are sifted of many of the elements of everyday life: What is the saturation point for city noise—the point beyond which human adaptation cannot compensate for the tax noise levies on the attention, on the energy, and on the relaxation periods?

A pragmatic answer is given in the letters sent to the Health Department over a period of years complaining of noise in the five boroughs of Greater New York. The very fact that people have written these letters after a period of suffering is an answer to the question: How much noise can individuals stand?

We say, "after a period of suffering," advisedly. A study of these letters reveals that, while one out of twenty-five may be from a crank, the other twenty-four are from sensible people who have delayed making their complaints until they could endure conditions no longer. One letter, for example, tells of night riveting that had gone on for three months before the people in a neighboring apartment house decided to complain; another from the dean of women of a leading college protested against the clangor of street traffic that had disturbed a whole semester's work in the classrooms on the exposed side of the

buildings; and school principals had figures to prove the slowing up of the whole year's work by the constant disturbance of recitations by noise from outside. So it goes through the voluminous files that house these complaints—the majority of the complaints show that stable, serious people are disturbed by noise to the point where they feel that they cannot adapt themselves to it.

It seems significant that these people should turn for help to their department of health. With an instinctive logic, they recognize noise as a health problem—a serious hindrance to their well-being and efficiency. Whether or not noise has reached its worst proportions at this time, it surely has reached a point where something must be done to give people relief from it—something more than the abating of individual noises when and as complaints are made of them.

Another thing—significant of the way the noise nuisance has projected itself into the minds of thinking people as a problem that must be solved now—is the alacrity with which the members of the New York Noise Abatement Commission entered into their work. Not one of the fourteen men invited last October to serve on this commission—and they knew they would have much hard work to do—refused to perform his patriotic task. Doctors, lawyers, builders, engineers, executives of large organizations, all had found noise a great handicap in their varied work and had already given much thought to its curbing.

The noise survey of the city, conducted by the Noise Abatement Commission during its first four months, reveals tremendous peaks of noise at certain places and at certain hours—noise that piles up as high as 94 decibels down on Cortland Street where the radio shops are congregated, and 76 decibels at many of the street corners where cross town trucking is heaviest. This approaches the 100 decibel limit, which is the point where sound is so loud that it sets the ear tingling. This would seem to be a point where continued noise creates physical discomfort.

The survey further reveals that the din of traffic cluttered streets travels up as high as the thirtieth floor of office buildings and that a full medley of city noise reaches up even higher—to the very topmost floors of isolated skyscrapers.

Perhaps we cannot truly say that the noise of the city has reached the saturation point in view of the fact that there are still oases of comparative quiet—like the Mall in Central Park, the first set-back stories of the new style skyscrapers that are protected from street noise by the sound-shadow of the out-jutting stories below, and a few residence streets in Brooklyn where the sound of baby carriage wheels is recorded by the noise testing machines used in the survey.

The fact remains that unnecessary noises surround most of the six million New Yorkers during all their working hours and most of their sleeping hours. Many people never have a chance to recover from the effects of one group of noises before they are exposed to another group. Already noises, or rather the causes of noise, are so closely interwoven with our economic and industrial life that it will take the combined ingenuity of builders, acoustical engineers, automobile builders, and lawyers to change present conditions without working hardship on any group in the community. Fortunately the Noise Abatement Commission is made up of men equipped by their life training to deal with the many ramifications of this modern public health problem and make New York a more comfortable, more livable city for all classes of people living in it.

CONGRESS AUTHORIZES NATIONAL INSTITUTE OF HEALTH

THE bill for a National Institute of Health, which has been pending before Congress for several years, was passed late in May, and signed by the President. This measure, which had been endorsed by the American Public Health Association, changes the name of the Hygienic Laboratory of the U. S. Public Health Service to National Institute of Health, authorizes the appropriation of $750,000 for its expansion, permits the government to accept unconditional gifts and donations for investigations of human diseases and public health conditions, and allows qualified scientists to be appointed fellows at the newly created Institute. The bill was sponsored by Senator Joseph E. Ransdell of Louisiana. It is gratifying to know that Congress is sufficiently interested in public health, in the midst of its discussions of the tariff and other important matters, to pass this measure.

ASSOCIATION NEWS

Cathedral, Mexico City

A Nine-day, All-expense Tour with 5 Days in Mexico City,

From Thursday, Midnight, October 30, to Saturday, November 8, 1930

FOR MEMBERS OF THE AMERICAN PUBLIC HEALTH ASSOCIATION AND THEIR FAMILIES, FOLLOWING THE FIFTY-NINTH ANNUAL MEETING OF THE ASSOCIATION IN FORT WORTH, TEX., OCTOBER 27 TO 30, 1930

THE Chief of the Department of Health of the Republic of Mexico, Dr. Rafael Silva, has, in the name of the department and with the approval of the President of the Republic, invited the members of the American Public Health Association to visit Mexico City following the Annual Meeting in Fort Worth, for the purpose of meeting the public health workers of Mexico and participating in a scientific program of interest to American public health workers. At the same time members of the Association are invited to be the official guests of the government at a number of entertainments.

In addition, the members of the Association in San Antonio, Tex., have invited the delegates to stop over for a visit in San Antonio and to participate in a brief meeting in that city.

In order to make the acceptance of this invitation convenient for the members of the Association and to reduce the

expense, an all-expense tour on a special train has been arranged.

The preliminary itinerary and program follow:

Thursday, October 30—

10.00 P.M.—Cars open—Fort Worth

Friday, October 31—

12.30 A.M.—Lv. Fort Worth
Breakfast on train
9.00 A.M.—Ar. San Antonio
9.15 A.M.—Tour of the city, visiting The Alamo, Medina Lake, etc.
12.15 P.M.—Return to Hotel
12.30 P.M.—Luncheon
Afternoon—At leisure
4.00 P.M.—Lv. San Antonio
Dinner on train
8.30 P.M.—Ar. Eagle Pass

Saturday, November 1—

Breakfast on train
8.00 A.M.—Ar. Monterrey—tour of city including El Canon, Bishop Palace, etc.
10.30 A.M.—Lv. Monterrey
Luncheon on train
Dinner on train

Sunday, November 2—

Breakfast on train
9.00 A.M.—Ar. Mexico City
9.30 A.M.—Excursion to San Juan Teotihuacan (Pyramids, Museum and Garden)
12.00 M. —Luncheon, Gruta Restaurant, under auspices of Secretary of Public Education
2.00 P.M.—Return to Mexico City
4.00 P.M.—Folklore Pageant at Centro Venustrano Carranza (Outdoor Theatre) under the auspices of Federal District of Mexico
Evening—At leisure

Xochimilco's Floating Gardens

Monday, November 3—

9.30 A.M.—Meeting of the Delegation with the Department of Public Health of the Republic of Mexico—Assembly High School Auditorium or at the Department of Public Health

PROGRAM

1. **Address of Welcome**—DR. RAFAEL SILVA, Chief of the Department of Public Health of Mexico
2. **Reply to Address of Welcome**—A. J. CHESLEY, M.D., President of A. P. H. A., HUGH S. CUMMING, M.D., Surgeon General of the U. S. Public Health Service, Washington, D. C., and J. C. ANDERSON, M.D., State Health Officer of Texas
3. **History of Health in Mexico**—DR. ULISES VALDES, Secretary General of the Department of Public Health.
4. **Local Public Health Work**—DR. MIGUEL BUSTAMENTE, Director of Health Unit at Vera Cruz, Ver.
5. **Display of film showing public health work in Mexico**

1.00 P.M.—Luncheon
4.00 P.M.—Reception and meeting of President Ortiz Rubio, Chapultepec Castle
9.00 P.M.—Banquet and Dance, Auspices of Department of the Central Federal District of Mexico

Tuesday, November 4—

9.30 A.M.—**Scientific session**

PROGRAM

1. **Address**—W. S. RANKIN, M.D., *Chairman*, Executive Board, A. P. H. A., Duke Endowment, Charlotte, N. C.
2. **Address**—B. J. LLOYD, M.D., Pan American Sanitary Bureau, Washington, D. C.
3. **Safeguarding a City Milk Supply**—H. V. CARDONA, D.V.M., Supervisor of Milk Sanitation, Department of Public Health and Welfare, Fort Worth, Tex.

12.00 M. —Drive to the Desierto de los leones (Desert of Lions)
Luncheon, under the auspices of the Secretary of Public Works

2.00 P.M.—Return to Mexico City, with a tour of the city, including the Cathedral The Plaza de Toros, Chapultepec Castle (the White House of Mexico and former home of Maximilian and Carlotta), etc.

Evening—At leisure

Wednesday, November 5—

9.30 A.M.—Tour of inspection of the beautiful new buildings of the National Department of Health

12.00 M. —Depart for Xochimilco—Luncheon under auspices of Department of Public Health

3.00 P.M.—Walk in Gardens and gondola tour of canals of Xochimilco

Inspection of Mexico City Water Supply

Evening—Concert

Thursday, November 6—

The delegates will be at leisure to make their own arrangements individually or in groups for additional sight-seeing or visits to places not included in the previous four days.

8.30 P.M.—Lv. Mexico City

Friday, November 7—

7.00 A.M.—Breakfast on train

12.00 M. —Luncheon on train

6.30 P.M.—Dinner on train

Saturday, November 8—

2.00 A.M.—Ar. Eagle Pass

7.00 A.M.—Ar. San Antonio

7.15 A.M.—Breakfast on train

12.00 M. —Luncheon on train

3.30 P.M.—Ar. Fort Worth

The total cost of the tour, including all expenses from Fort Worth to Mexico City and return to Fort Worth, with stop-over in San Antonio, including sight-seeing, transportation, all meals en route and during five days in Mexico City, all side trips, and the use of pullman cars in Mexico City, is to be as follows:

1 person in upper berth—$112.40
1 person in lower berth—$149.90
2 persons in lower berth—$126.15 each
2 persons in a section—$131.15 each
3 persons in a section—$121.55 each
2 persons in a compartment—$169.90 each
3 persons in a compartment—$147.40 each
2 persons in a drawing-room—$189.90 each
3 persons in a drawing-room—$160.75 each

Assurance has been given that the most modern equipment will be used on the special train, including observation car, maid and valet service, shower bath, dining car, baggage car and probably a radio. An individual making the trip by himself would need to spend approximately $250 to cover the same ground.

Application for a place in the delegation should be made on the following blank, and this sent to the Executive Secretary of the Association.

Homer N. Calver, Executive Secretary,
American Public Health Association,
370 Seventh Ave., New York, N. Y.

Please reserve in the Delegation of the A. P. H. A. to Mexico City .....

Space desired

I will be accompanied by .....

I am a member of the American Public Health Association .....

Please send me a membership application blank .....

Signed .....

Address .....

.....

PLACES OF INTEREST IN DELEGATES' OWN TIME

Guadalajara—This city, with a population of 180,000, is the capital of the state of Jalisco, and has an elevation of 5,200 ft. above sea level. It is the second city in size and importance in the Republic. It is known for its many fine buildings, churches and homes. In and near Guadalajara are points of interest considered some of the most attractive in the Republic, including the wonderful falls some 5 miles from the city, and Lake Chapala some 20 miles from the city. Guadalajara is an overnight ride by train from Mexico City.

Puebla—A round trip can be made to the city of Puebla by automobile or bus in one day very comfortably, over the paved highway from Mexico City some 75 miles distant. Puebla has a population of over 100,000 with an elevation of 7,100 feet above sea level. It is noted for its Cathedral and Royal Chapel. Other points of interest near Puebla include the Pyramid of Cholula, which has a direct relation to the Pyramid of San Juan Teotihuacan near Mexico City.

Cuernavaca—This is a celebrated health resort, a mecca for tourists out of Mexico City. Cuernavaca has 7,000 to 10,000 population. A magnificent new paved highway from Mexico City to Cuernavaca, 40 miles distant, leads through some of the most wonderful scenery in this area. The highway leaves the valley of Mexico and crosses the mountain range at an elevation of between 10,000 and 11,000 feet above sea level and then descends to Cuernavaca with an elevation of 4,500 feet above sea level. This city is noted for many points of interest, including the home of former Ambassador Dwight Morrow, the original Palace of Cortez, the famous Borda Gardens and the Cathedral, one of the oldest and quaintest churches in the Republic, built in 1529, also caverns and river falls nearby. The round trip from Mexico City can be made comfortably by automobile or bus in one day.

Veracruz—Population is 100,000. Veracruz is one of the oldest and most historical cities in the Republic and formerly was the chief seaport. The trip from Mexico City to Veracruz by rail is through a mountainous section with some of the most picturesque scenery, and can be made in one day and return overnight. Veracruz has also recently inaugurated a substantial full-time health department ser-

Castle of Chapultepec

ice, jointly through the federal health service, the state health service and with the cooperation of the International Health Board. This work is being carried on under the direction of Señor Alfonzo Isunza and Dr. M. E. Bustamente.

NOTE: Other trips may be arranged for those having more time to such points as the two snow capped peaks that can be seen from Mexico City at all times, namely: Popocatepetl and Ixtlaccihuatl. Popocatepetl rises 17,70 feet and The Sleeping Lady (Ixtlaccihuatl) 16,060 feet above sea level. Not to have gazed awe-struck at these peaks from various points of vantage is to have missed two of the most inspiring scenic beauties of the world.

Monterrey—The Capital of the State of Nuevo Leon has a population of 150,000. Its altitude is 1,500 feet. This center for corn, beans, garbanzas and wheat is a busy commercial city with many factories. The principal points of interest are the Government Palace; the church of San Francisco, the most interesting antique in Monterrey, erected in 1590; El Obispado (Old Bishop's Palace), built 1785, from which is obtained a wonderful panorama of the city and surrounding mountains that will long remain in the memory. Near Monterrey are the Garcia Caves and Topo Chico Hot Springs.

OTHER MEETINGS

Simultaneously with the meeting of the Association in Fort Worth, October 27–30, the following organizations will meet: American Association of School Physicians, International Society of Medical Health Officers, Conference of State Sanitary Engineers, Texas Association of Sanitarians.

SPECIAL TRAINS

During July a letter will be sent to the entire membership regarding special train arrangements.

WESTERN BRANCH, A. P. H. A., MEETS IN SALT LAKE CITY

THAT the Western Branch of the American Public Health Association is a definitely established and functioning organization was affirmed at their first regional meeting held in Salt Lake City, Utah, June 12–14, at which a constitution and by-laws were adopted and many western public health problems considered.

The keynote of the meeting was understanding and appreciation of each other's problems in the field of public health. Making the services and experiences of each part of the western section available to every other part was urged.

Outstanding among the many excellent speeches and papers were the addresses delivered by Governor George H. Dern of Utah, President A. J. Chesley of the A. P. H. A. and President W. C. Hassler of the Western Branch, A. P. H. A.

Governor Dern welcomed the visiting members and emphasized the humanitarian aspects and monetary value of public health work. He said: "It is sometimes puzzling that states or cities should be so reluctant to give adequate financial support to their public health departments. Surely no public expenditure returns larger dividends on the investment."

Dr. Chesley spoke of the importance of interesting the entire world in our problems, and the possibilities that such coöperation offers for a world-wide program. Dr. Hassler pointed out the necessity of awakening a health consciousness on the part of our people. With the support which this would give to the public health program, the amount of work that could be done is inestimable.

About 150 public health workers from western United States, British Columbia, and Hawaii were present at the meeting. Scientific sessions were devoted to the discussion of tuberculosis, undulant fever, tropical medicine, meningitis, training of health officers, the recent A. P. H. A. survey of Honolulu, school health education, public health nursing and preventive dentistry.

Following discussion on Rocky Mountain Spotted Fever, a permanent committee, under the chairmanship of Dr. W. F. Cogswell, Montana State Health Officer, was appointed. One session was devoted to the public health aspect of the Boulder Dam. This is the first time that consideration has been given to this phase of the Boulder Dam project in public meeting and was followed by the preparation of a resolution requesting the Secretary of the Interior to confer with the Surgeon General regarding the entire problem.

Two evening meetings of interest to the general public were held. These were presided over by Dr. H. P. Kirtley, President, Utah State Medical Society. In discussing "Utah Public Health" Dr. Shepard at the first evening session presented a striking comparison between the practice of 1665 and the present day. Dr. Langley Porter, Dean of the Medical School, University of California, San Francisco, addressed a general session on "Keeping the Family Well." He made a plea for the general practitioner of medicine and approached the question of the cost of medical care from the viewpoint of the physician and the hospital staff rather than from the usual angle of the layman.

Officers elected to carry on the work for the coming year were:

President, William C. Hassler, M.D., San Francisco
First Vice President, E. H. Hanley, M.D., Seattle
Second Vice President, George Parrish, M.D., Los Angeles
Third Vice President, T. B. Beatty, M.D., Salt Lake City
Secretary, W. P. Shepard, M.D., San Francisco
Treasurer, W. F. Higby, San Francisco

Membership in the Western Branch has grown from 125 to almost 1,100 during the past two years, 10 new active members and 26 new regional members being enrolled at this meeting. It is because of this growth that the offices of third vice president and treasurer were created.

DR. SLEMONS MICHIGAN'S NEW COMMISSIONER OF HEALTH

C. C. Slemons, M.D., Fellow of the A. P. H. A., for 20 years City Health Officer of Grand Rapids, has been appointed Commissioner of Health of the State of Michigan, to succeed the late Dr. Kiefer. Governor Fred Green could have made no wiser selection from the available persons in the State of Michigan. Dr. Slemons is a graduate of the Detroit College of Medicine and the University of Illinois Medical School. He has been intimately associated with national and state public health work. He has for 11 years been a member of the State Advisory Council on public health. Dr. Slemons served on the Governing Council of the Association from 1921 to 1927.

DEATH OF SAMUEL M. HEULINGS

Samuel M. Heulings of Haddonfield, N. J., died at his residence, May 15, at the age of 70.

Mr. Heulings had a long life of useful endeavor devoted to improving and safeguarding public milk supplies. He was a consulting dairy engineer of international reputation and was identified with the development of the first machinery used for the commercial pasteurizing and handling of milk in this country.

For a number of years Mr. Heulings manufactured high class dairy equipment at Haddonfield, N. J.; later he was connected with the Sheffield Farms Corporation in New York City and for many years directed the construction and operation of machinery used to process a large portion of the milk supply of New York City. In his work he was always closely associated with municipal health departments and his opinion was highly respected in all matters concerning milk improvement. He has steadfastly advocated the use of the highest standards of safety in pasteurizing milk and has been a ruthless opponent to any and all who have suggested lower standards. As an inventor he has given the dairy industry many useful devices. He is the author of several important contributions to the literature on dairy topics.

During the last few years of his life Mr. Heulings has been consultant to the Lower Merion Township Board of Health on Milk Control matters. At the time of his death he was engaged in the invention and construction of a pasteurizer which he had hoped would enable the processing of milk in a manner far superior to methods used heretofore. Mr. Heulings was a member of the American Society of Mechanical Engineers and a Charter Fellow of the American Public Health Association, elected in 1922, having been a member since 1917. He served for some years on the Committee on Milk Supply of the Sanitary Engineering Section of the A. P. H. A.

GERMAN HYGIENE MUSEUM, DRESDEN

THE opening of the new building for the German Hygiene Museum, which has been contemplated since 1911, brings to maturity the plan of presenting in actual or symbolic form, by a series of exhibits, the present-day knowledge and accomplishments of hygiene, and at the same time shows the widening scope of the Hygiene Museum and its work.

The Museum is also an inspiration center to act as the starting point for a

movement to create opportunities everywhere for permanent instruction in hygiene, thus realizing the ideals of Karl August Lingner, who was a pioneer in exhibition work, and who was responsible to a great extent for the 1911 International Hygiene Exhibition.

With the aid of the German Reich, the Freestate of Saxony, and the City of Dresden, a suitable home has been erected for the Museum on a beautiful central site in Dresden, in the vicinity of the large athletic fields of the Grosser Garten. The foundation stone of the Museum was laid on October 8, 1927, and on May 17, 1930, the new building was dedicated and opened to the public. This also marked the opening of the 1930 International Hygiene Exhibition. For the first time a number of new specimens and groups are shown representing both the latest scientific researches and the development of exhibition technic.

The territory covered by the exposition extends over 120 acres. The center is occupied by the new building constructed by the architect Dr. Wilhelm Kreis. The center of the collections, as in 1911, is the exhibit "The Man" showing the anatomy and physiology of the human body by pictures, models, preparations, and other devices. Part of this exhibit is the "Transparent Man," a special method of making translucent the tissues of the body, the blood vessels, the skin formation and structure, the respiratory organs—showing lung tissues, etc. Around this are various other groups.

The scientific director of the Museum, Professor Dr. Martin Vogel, is particularly proud of the exhibit which constitutes the department of "Public Health Education." The industrial exhibit also contains many attractive features, while a special exhibit on the "Hospital" has its location in a spacious building covering 1½ acres of ground.

Many countries are represented in the international part of the exhibit.

Ninety-two members of the A. P. H. A. sailed on the S.S. Adriatic from New York on June 14. They will spend about a week in England, and stop at Brussels, Cologne, Wiesbaden and Berlin before reaching Dresden on July 5. Four days will be spent in Dresden. Quite an extended trip will be taken from there—visiting several German cities, viewing the Passion Play at Oberammergau, then going on to Switzerland and France.

NEW MEMBERS

Health Officers Section

Milton F. Arnholt, M.D., Lincoln, Nebr., Superintendent of Health

Dr. Juan B. Ascanio, Caracas, Venezuela, General Inspector, National Public Health Service (Assoc.)

Atticus G. Blanton, M.D., Sonora, Tex., City and County Health Officer

Lawrence T. Browning, M.D., Kingwood, W. Va., Director, Preston County Health Dept.

Howard L. Darby, D.V.S., Ft. Worth, Tex., Inspector in Charge, U. S. Bureau of Animal Industry Tuberculosis Eradication

Leo P. FitzGerald, M.D., University City, Mo., Health Commissioner

James H. Flynn, M.D., Troy, N. Y., Commissioner of Health

W. H. Ford, M.D., Sudan, Tex., City Health Physician

Joseph P. Franklin, M.D., Cumberland, Md., County and Deputy State Health Officer

Zalmon E. Funk, M.D., Santa Rosa, N. M., Guadalupe County Health Officer

Menno Hostetler, M.D., Wichita, Kans., County Health Officer

Carl C. Irick, M.D., Webster Groves, Mo., Health Commissioner

Marshall T. Knox, M.D., Cleburne, Tex., City Health Officer

S. R. McKelvey, M.D., Denver, Colo., Executive Secretary, State Board of Health

A. R. Matthews, Mule Shoe, Tex., County Health Officer

Louis O. Obrock, M.D., Clayton, Mo., Health Officer, St. Louis County

John B. Setzler, M.D., Columbia, S. C., Director, Richland County Health Unit

Edward H. Trowbridge, M.D., Worcester,

Mass., Chairman, City Board of Health
Dr. Jerry E. Vanderpool, Walla Walla, Wash., Health Officer

Laboratory Section

O. C. Gerhardt, Houston, Tex., Chemist and Bacteriologist, Phenix Dairy
Marshall W. Jennison, S.B., Cambridge, Mass., Teaching Bacteriology, Massachusetts Institute of Technology
Joseph J. Reid, D.V.M., Ft. Worth, Tex., Laboratory Director, Livestock Sanitary Commission
James N. Roche, Ph.D., Pittsburgh, Pa., Research Worker, Koppers Company
W. S. Stanley, Houston, Tex., Chemist, Sewage Disposal Plants

Vital Statistics Section

Joseph P. Yaffe, M.D., Boston, Mass., School Physician

Public Health Engineering Section

John W. Carey, University City, Mo., Supervisor of Sanitation
G. C. Carvajol, San Antonio, Tex., Chief Milk Inspector
F. E. Devlin, Amarillo, Tex., Consulting Engineer, Water and Sewage Purification Practice
J. E. Foster, Houston, Tex., Production Manager, Phenix Dairy (Assoc.)
Fred B. Green, Austin, Tex., Supervisor, Milk Sanitation, State Department of Health
Ralph W. Peterson, B.S., Chicago, Ill., Operation of Sewage Treatment Works
Elwood J. Umbenhauer, S.B., Laredo, Tex., Charge of City Water Filtration Plant
John B. Waide, Jr., B.S., Sweetwater, Tex., Sanitary Inspector

Industrial Hygiene Section

Michael Lake, M.D., New York, N. Y., Medical Director, R. H. Macy & Co.

Food, Drugs and Nutrition Section

Jessie G. Cole, Albany, N. Y., Nutrition Specialist, State Department of Health
Kate Daum, Ph.D., Iowa City, Ia. (Assoc.)
Richard C. Graham, B.S., Brownsville, Tex., Sanitary Inspector
Louise L'Engle, A.B., Ames, Ia., Assistant Professor, Foods and Nutrition, Iowa State College

Child Hygiene Section

Maude A. Covalt, R.N., Berkeley, Calif., Public Health Nurse, Inst. of Child Welfare, University of California
Louis Schneider, Salinas, Calif. (Assoc.)
Edward F. Urba, M.D., Stamford, Conn., School Physician
M. Rollin Walker, M.D., Reno, Nev., Medical Supervisor of Public Schools

Public Health Education Section

William C. Fleming, A.B., Augusta, Ga. (Assoc.)
Jessie L. Gilchrist, A.B., Atlantic City, N. J., Teacher of Hygiene, Senior High School
Alexander S. Keenan, M.D., San Francisco, Calif., Deputy Commissioner of Public Health
Fletcher B. Morgan, Nashville, Tenn., Associate, Public Health Education, Department of Health
Grace C. Patrick, M.D., Kansas City, Mo., Lecturer on Preventive Medicine (Assoc.)
Dr. Alberto Zwanck, Buenos Aires, Arg., Professor of Hygiene, Medical School, University of Buenos Aires (Assoc.)

Public Health Nursing Section

Grace H. Cole, R.N., Chicago, Ill., Rural Public Health Nurse, Cook County Bureau of Public Welfare
Myrtle E. U. Conquist, R.N., University, Va., Directing Nurse, Public Health Extension Service
Violet Crook, Gonzales, Tex., County Public Health Nurse
Emily M. Dannies, Burlington, Ia., County Public Health Nurse
Lily C. Jones, B.S., Atlanta, Ga., Territorial Supervisor, Metropolitan Life Insurance Company Nursing Service
Ruth H. King, R.N., Cincinnati, O., Territorial Supervisor, Central Territory, Metropolitan Life Insurance Company
Mary E. Peace, Ft. Worth, Tex., County Health Nurse
Alice A. Rowe, R.N., Greensburg, Pa., School Nurse
Elizabeth D. Simon, R.N., Jefferson City, Mo., Public Health Nurse, Division of Child Hygiene, State Board of Health
Edithe S. Watkins, R.N., Kansas City, Mo., Assistant Superintendent, Visiting Nurse Association

Unaffiliated

John R. Dickson, M.D., Chefoo, N. China, Physician, Charge of Chefoo schools for foreign children (Assoc.)
Grace G. Farrell, C.P.H., Milton, Mass., Student (Assoc.)
George H. Johnson, Joliet, Ill. (Assoc.)
W. E. Stone, D.V.M., Pasadena, Calif. (Assoc.)
Chester M. Tobin, Shanghai, China, Physical Director, Foreign Y. M. C. A. (Assoc.)

DECEASED MEMBERS

Samuel M. Heulings, Haddonfield, N. J., Elected Member 1917, Fellow 1922
Guy L. Kiefer, M.D., Lansing, Mich., Elected Member 1907, Fellow 1923
Woods Hutchinson, M.D., Hollywood, Calif., Elected Member 1912
S. S. Winner, M.D., Denison, Ia., Elected Member 1919

PUBLIC HEALTH ADMINISTRATION

HENRY F. VAUGHAN, D. P. H.

Providence, R. I., Survey—The attention of the public health worker has for a long time been focused upon Providence, R. I., because of the unusual piece of health work being carried on there under the direction of Charles V. Chapin, M.D. Therefore, it is particularly interesting that a health and hospital survey has been made. The survey was carried on by James Wallace, M.D., under the auspices of the Committee on Administrative Practice of the A. P. H. A. A report of 314 pages has been published in which are set forth many of the remarkable contributions to public health made by Providence through Dr. Chapin, and Edwin M. Snow, M.D., his predecessor.

This city has been credited with being a pioneer in several fields of public health administration, largely due to the commanding influence of Dr. Chapin, who has been the Superintendent of Health for 46 years. In fact, since the organization of the Department of Health in 1856 there have been only two health officers in Providence, Dr. Snow having served for 28 years.

> . . . These records are remarkable for the two physicians in that they were able to give such long continuous service, and remarkable for the city that there has been so little political interference with the office, and that it has been fortunate in having administrative officers who have been spared to it and remained with it in all the changing conditions incident to three-quarters of a century of a city's life.

Providence was the first city in this country to establish, in 1888, a municipal public health laboratory. In 1893 the first experiments in filtering water by municipal filtration were made here. Providence was the first city to discontinue, in 1905, fumigation as a form of terminal disinfection. This city was one of the first in the United States to make vaccination against smallpox a qualification for school enrollment. It has been a requirement for school attendance since the year 1856. It is stated that Providence was the first city in the country to establish, in 1908, an open air school for children needing education under special protective conditions.

Based on the *Appraisal Form for City Health Work* (3d ed.), of a possible 1,000 points Providence attained a score of 817.2. There is a general uniformity of high attainment in all of the recognized activities, no one of which scores less than 50 per cent. With the exception of preschool hygiene, food and milk control, public health instruction, cancer and heart disease, all of the activities rated 80 per cent or better. The staff of the Department of Health consists of 61 persons, 34 of whom are full-time and 27 part-time. In addition to the Superintendent of Health there are 2 deputy superintendents, 16 nurses, 5 inspectors, 2 technicians, 7 clerks, 1 automobile driver; and a part-time personnel consisting of 12 clinic physicians, 7 physicians for sick poor and private schools, 2 dentists, 1 technician and 3 clerks. There is no division of venereal disease control, this work being carried on by the State Department of Health. The City Department of Health with its 16 nurses performs only a part of the public health nursing work, as this work is supported by the District Nursing Association employing 72 nurses and the public school staff of 18 nurses. There is no division of the department dealing with tuberculosis. This is partly a state

function and partly a function of a voluntary agency, the Providence Tuberculosis League.

Among the general recommendations made by the Survey Committee is one for better financial support of the City Department of Health. Despite a low per capita appropriation for health, Providence has done a splendid job in health conservation. Another recommendation was that a properly planned program of popular health instruction be inaugurated. To the epidemiologist the details of the control practices as performed in Providence should be of special interest. It is not the general practice passively to immunize by giving diphtheria antitoxin to all susceptible household contacts. These are kept under observation and if they give any indication of developing diphtheria they are given a full therapeutic dose.—James Wallace, M.D., A Survey and Appraisal of the Health Activities of Providence, 1929. Published by Providence Community Fund.

Municipal Expenditures for Public Health—Using the tabulations prepared for *Public Health Bulletin No. 164* giving the official expenditures for the various divisions of public health procedure, an endeavor has been made to ascertain any possible correlation between a reduction of infant mortality in large American cities and amounts of money expended by official agencies for various health functions. As there exists no uniformity of bookkeeping for health departments it is extremely difficult to make comparisons by function. Under these limitations there cannot be shown statistically any direct relation between the per capita expenditures and infant mortality rates, on the basis of geographical correlation for a single year. The desirability of a study using reliable figures for a series of years immediately suggests itself. Thus we might ascertain whether increasing per capita expenditures for various health services has a definite effect upon the general trend of infant mortality.—Richard A. Bolt, Municipal Expenditures for Public Health, *J. Hyg.*, 11, 601 (May), 1930.

Rural Health Service—At the beginning of the present calendar year there were 505 counties or districts with local health service under whole-time health officers. Eighty-eight per cent of these were receiving aid from the state health department, U. S. Public Health Service, or the Rockefeller Foundation. During 1929, whole-time health service for counties was established in 47 units and was discontinued in 9. The largest gain in one state was that of 15 in Tennessee. For per cent of rural population served, Alabama leads with 80 followed by Maryland, Ohio, South Carolina, Louisiana, and North Carolina, each exceeding 50 per cent. The rural population of the United States in 1920 was 51,406,017 of which 24 per cent is now served with whole-time health departments.—L. I. Lumsden, Extent of Rural Health Service in the United States, 1926–1930, *Pub. Health Rep.*, 45, 1065 (May 9), 1930.

LABORATORY

C. C. YOUNG, D. P. H.

DESCRIPTION OF A NEW MECHANICAL DISINTEGRATOR

E. W. SCHULTZ, M. D., F. A. P. H. A., AND F. D. BANHAM

Stanford University, Calif.

INVESTIGATORS working with filtrable viruses appreciate how much time may be consumed in reducing virus tissues to a finely divided physical state, a task generally carried out by hand with the aid of a mortar and pestle. This method of grinding tissues is not only comparatively inefficient, but exceedingly monotonous and tiring. In order to overcome these objections, we designed a machine whereby the mortar and pestle could be operated mechanically. This has proved so satisfactory that we offer a brief description of it for the benefit of those interested.

Figure I gives a top and Figure II a lateral view of the machine. The machine proper is fastened to a metal base (1). It consists of a suitable cast iron pedestal (2), provided with a thrust bearing (7), into which is fitted a shaft (6), which passes through into the grinding chamber and bears at its upper end a driving disc (8) provided with several eccentrically placed apertures (9). The shaft is driven by means of worm gear (10), which engages with a worm (11), attached to the horizontal shaft (12) of an electric motor (13).

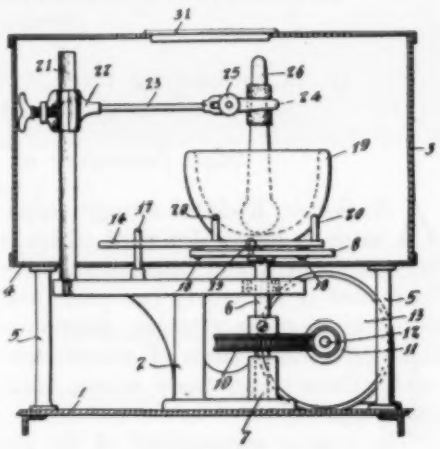


FIGURE II

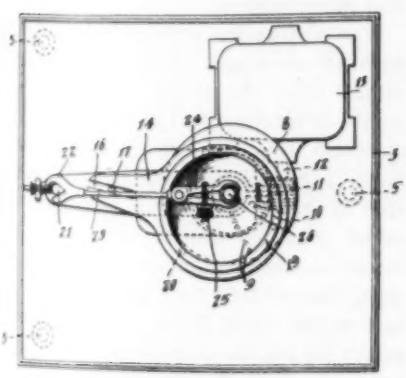


FIGURE I

Within the grinding chamber a platen (14) is movably positioned above disc (8) by means of a pin (15) which fits into one of the eccentric apertures (9). The platen (14) is provided with a bifurcated end (16), which engages with a fixed pin (17) attached to the pedestal (2). The mortar may be fixed in position on the platen by means of rubber covered metal fingers extending upward from the platen (14).

The pestle (26) is held in position by

means of a round flexible metal arm (23) provided with a clamp (24), operated with a thumb screw (25). The metal arm (23) is fastened by means of a special clamp (22) to a vertical triangular rod (21) fixed to the pedestal (2).

The mechanism described imparts to the platen holding the mortar an eccentric motion. By thus moving the mortar the pestle is brought into essentially the same operable relationship with the mortar as when the grinding process is carried out by hand. When desirable, grinding may be carried on in a closed chamber (3), which may be entered by means of a hinged lid, provided with a glass window to facilitate inspection of the material while the machine is in operation.

The machine described should not only prove useful in grinding virus tissues, but also in grinding most substances that are commonly disintegrated by means of a mortar and pestle.

The device has been patented and arrangements are being completed for its manufacture.

ELECTRIC KJELDAHL NITROGEN WITHOUT FUME HOOD

W. D. STOVALL, M. D., F. A. P. H. A., AND M. STARR NICHOLS, PH. D., F. A. P. H. A.

State Laboratory of Hygiene, Madison, Wis.

AN electric Kjeldahl nitrogen apparatus is herein described which is very convenient and satisfactory. We have used it for nearly two years and are able to make nitrogen determinations on various kinds of waters, sewages, effluents and trade wastes accurately and rapidly.

The general arrangement of the apparatus is shown in Figure I.

The still and digester were designed and constructed at the Service Department of the University of Wisconsin. The structural frame work was built in the form of brackets from 1" x ⅛" angle iron welded together, which were then securely fastened to the wall by means of bolts. These brackets were designed to receive and hold securely the various parts of the two pieces of apparatus. The switch box supports were made from a length of heavy galvanized sheeting shaped to fit the switches and form an integral part of the brackets.

ELECTRIC EQUIPMENT

Gilmer heating units with hollowed tops are employed for heating the flasks in each piece of equipment. These were set in place on an angle iron shelf which is a part of the bracket. Each heating unit requires 0.6 K.W.H. of current. Four service leads from a service switch box were installed, each carrying 30 amperes of 110 volt alternating current. Each heating unit is controlled by an ordinary snap switch. The advantages of electric heating are even temperature, low fire hazard, and ease of operation and maintenance.

The distillation apparatus is provided with an automatic signal which rings a buzzer when the proper quantity of distillate is received in the flasks. To accomplish this the extreme right hand flask, Figure I, is counter balanced so that a given weight of distillate will make electric contact and ring the buzzer. The distillation rate is so constant that all flasks are filled at the same rate as the signal flask. Aside from the safety factor the analyst has no watching to do while distillation is in progress and is free to do other tests.

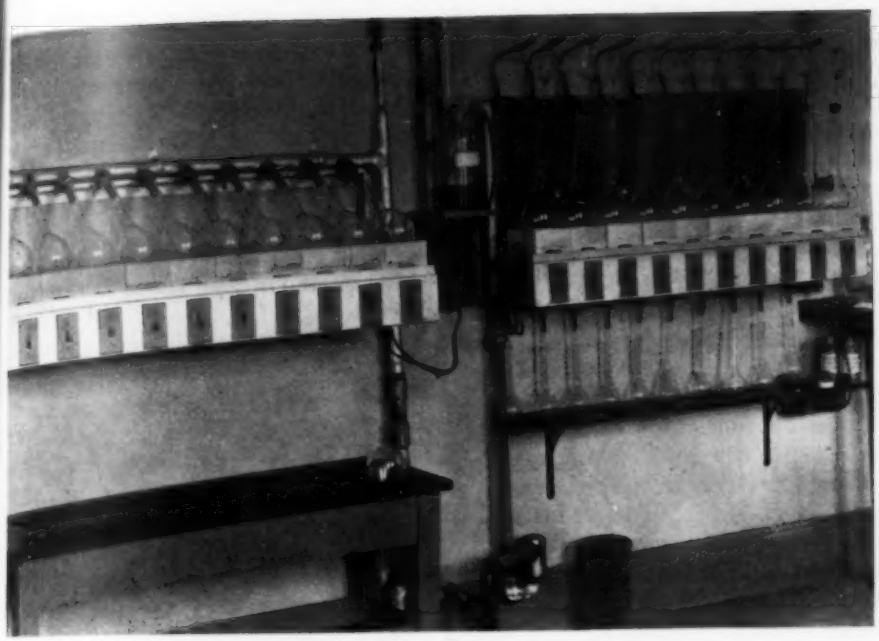


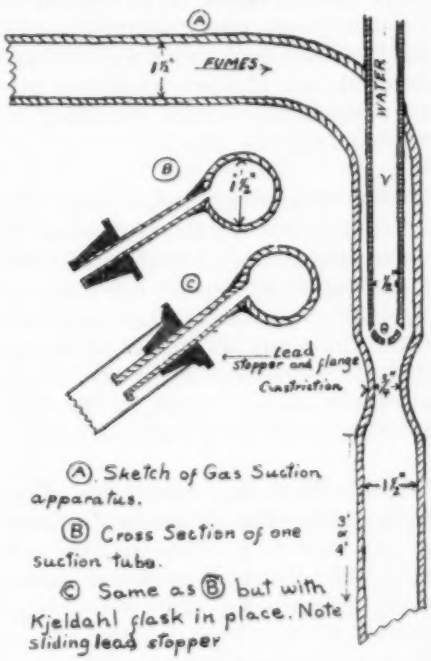
FIGURE I

THE STILL CONDENSER

The condenser was made from heavy copper sheeting in the form of a rectangular box open at the top—50″ long, 24″ high and 3″ wide. The condenser tubes were made of block tin 7/16″ outside diameter, with 1/16″ wall, each 36″ long extending below the tank for receiver flask connection and above tank for flask connection. They were soldered in the bottom of the tank and supported by cross arm at the top. Each tube at bend for flask connection was surrounded by a steel spring to prevent sharp bends. The copper tank was reinforced in the central part to prevent bulging. Water is connected for cooling to the bottom of one end, with a waste pipe connected with sewer at the top of the other end.

THE FUME ELIMINATOR

The fume suction tube is modelled after one described by Hastings, Fred, and Peterson (1927)[1] but with some modifications which we believe to be improvements. The main suction tube is of 1½″ lead pipe of approximately ¼″



(A) Sketch of Gas Suction apparatus.
(B) Cross Section of one suction tube.
(C) Same as (B) but with Kjeldahl flask in place. Note sliding lead stopper

FIGURE II

wall. The essential parts of this apparatus are shown in Figure II. The construction immediately under the water jet permits the trapping of air and fumes as the water emerges from the slanting orifices. The flask connections are wiped into holes made in the main lead pipe. These side branches are of ⅜" lead pipe with 3/16" wall and are fitted with a sliding lead stopper as shown in (B), Figure II. In (C), Figure II, the flask is shown in place with the flange of the stopper resting on the lip of the flask. It is necessary that the flange of the stopper fit rather closely but the slight variation in the size of the neck of standard Pyrex flasks has offered no difficulty with our apparatus.

REFERENCE

1. Hastings, Fred, and Peterson. *J. Ind. & Eng. Chem.*, 19: 397, 1927.

VITAL STATISTICS

LOUIS I. DUBLIN, PH. D.

Vital Statistics for England and Wales, 1929—The Registrar General's report of vital statistics for 1929 gave a birth rate of 16.3 per 1,000 population and a death rate of 13.4 per 1,000 population. Communicable disease death rates per 1,000 population were: diphtheria, 0.08; measles, 0.74; typhoid fever, 0.01; and whooping cough, 0.15. The birth rate for London was 15.7 and the death rate 13.8 but these rates were for civilians only.—*Pub. Health Rep.*, 45: 754 (Apr. 4), 1930.

Vital Statistics for Scotland, 1929—The Registrar General of Scotland reported the number of deaths registered in 1929 as 70,917, giving a rate of 14.5 per 1,000 population. There were 92,876 births, a rate of 19.0 per 1,000 population. Marriages numbered 32,992 and deaths under 1 year, 8,058.—*Pub. Health Rep.*, 45: 755 (Apr. 4), 1930.

Vital Statistics for Irish Free State, 1929—The estimated population of the Irish Free State in 1929 was 2,971,992. There were 58,342 births, giving a birth rate of 19.8 per 1,000 population; and 42,974 deaths, a mortality of 14.6. Deaths from principal causes of death were: cancer, 3,016; pulmonary tuberculosis, 3,034; influenza, 1,629; diphtheria, 292; measles, 134; scarlet fever, 60; typhoid fever, 78; whooping cough, 378; and violence, 924.—*Pub. Health Rep.*, 45: 755 (Apr. 4), 1930.

Age-Sex-Seasonal Incidence of Certain Diseases in Children—The records of nearly 2,500 patients from birth to 13 years of age who were admitted to the Hospital for Sick Children during the past 5 years and about 5,000 records obtained from the Toronto Department of Public Health were examined to determine the age, sex, and seasonal incidence in various diseases. A pronounced age incidence was observed in certain diseases. Thus, of 351 cases of endocarditis only 7 were in patients less than 4 years of age; of 108 patients with rheumatic fever, only 1 was less than 3 years of age. Almost 70 per cent of the 48 infants with scurvy were from 6 to 12 months old and only 2 were more than 2 years old. The youngest patient with tetany was 8 weeks old and over 75 per cent of the patients were from 4 to 12 months old. The age incidence of intussusception approximated

that of tetany in that 79 per cent of the patients were also from 4 to 12 months of age. In hemorrhagic disease of new-born infants, the latest time of onset was after the 10th day. There were only 21 patients with acrodynia and the age of the patients varied from 8 to 23 months.

In the majority of diseases considered, it was found that males constituted no less than 60 per cent of the total patients were affected. In the cases of pyloric stenosis, 82 per cent of the patients were males and in tetany male patients accounted for 68 per cent of the total. Pyelitis and primary peritonitis occurred predominantly in females, no less than 80 per cent of the patients with pyelitis and 75 per cent of the patients with primary peritonitis being females. Endocarditis, chorea, whooping cough, and typhoid were the only other diseases seen more frequently in females than in males.

Tetany and anterior poliomyelitis showed marked seasonal incidence. Retropharyngeal abscess, nephritis, erysipelas, primary peritonitis, and acute appendicitis occurred somewhat more frequently during the winter and spring months. Pyelitis, intussusception and pyloric stenosis, on the other hand, were noted more frequently during the summer. A slight but definite seasonal predominance was found with hemorrhagic diseases of the new-born, purpura, chicken pox, scarlet fever, measles and asthma.—F. F. Tisdall, *et al.*, *Am. J. Dis. Child.*, 39: 163–173 (Jan.), 1930.

The Homicide Record for 1929—The United States has the highest homicide death rate of any large country in the world. In 1900, the homicide death rate of 31 American cities with comparable returns was 5.1 per 100,000 population; in 1919, the rate reached 9.1; and 10 years later, in 1929, the rate was 10.1.

A detailed record for 141 American cities for 1929, with a total population of about 38,000,000, showed 3,993 deaths from homicide, or a rate of 10.5 per 100,000. Memphis, Tenn., Birmingham, Ala., and Atlanta, Ga., showed the highest homicide rates for 1929, 66.8, 51.3 and 51.0 respectively. All of these cities have a relatively large colored population among which the homicide rate is persistently higher than among whites. The proportion of homicide deaths by firearms was 74.2 in New Orleans, 72.6 in Birmingham and 76.8 in Memphis compared to 48 per cent in Boston. The economic aspects of the homicide record are emphasized in the average age at death of the victims; for Memphis, 1924–1928, 31.7 years; Birmingham, 1927–1929, 31.6 years; New Orleans, 1920–1926, 31.3 years, and Boston, 1920–1929, 31.6 years.

The homicide rate for 13 leading cities of Canada for the period 1918 to 1928 decreased from 2.7 per 100,000 at the beginning of the period to 1.7 at the end. For 1928, the homicide death rate of Edmonton was 2.6 per 100,000; Montreal, 1.4; Ottawa, 0.18; Saskatoon, 2.8; Toronto, 2.7; Vancouver, 2.3; Windsor, 3.8, and Winnipeg, 2.5. Brantford, Calgary, Hamilton, London and Victoria had no homicides. The number of homicide deaths in the entire Dominion was 124, which, on the basis of 9,240,000 population, gives a rate of 1.3 per 100,000. For England and Wales for 1928, the homicide death rate was only 0.5 per 100,000, or precisely the same as 10 years ago. For the U. S. Registration Area for 1927, the homicide death rate was 8.7 and for 1928, 8.8.

The enforcement of prohibition has brought into existence an organization of crime and criminals. Constant attention has been directed toward Chicago as the center of organized crime, yet the homicide death rate for Chicago for 1929 was 12.7 per 100,000 or not

much above the average for the country at large. New York City had a rate of 7.1 per 100,000 or decidedly below the average of the whole country. Philadelphia had a rate of 8.8 in 1928, declining to 8.4 in 1929, or both years below the average. The rate for Detroit increased from 16.5 to 18.6. This is in marked contrast to the low rate for Windsor, Canada, which in 1928 was only 3.8, although the city is right across the river from Detroit.—Frederick L. Hoffman, *Spectator*, 124: 3, 18–19, 21 (Mar. 20), 1930.

Insured of Metropolitan Life Insurance Company—Never before during the first quarter of any year have health conditions been as good as have prevailed during the winter months of 1930. This is clearly shown by the mortality experience of approximately 19,000,000 persons who are insured in the industrial department of the Metropolitan Life Insurance Company. Comparison with the figures for the like period of 1929 shows marked reductions, for both white and colored policy holders, in the death rates for practically all of the important causes of death. Some improvement was expected, it is true, as there has been no wide prevalence this year of any of the epidemic diseases, whereas last year's first quarter health conditions were the worst experienced during the entire decade, owing to the epidemic of influenza which reached its height late in January, 1929.

The outstanding item again this year is the reduction in the death rate for tuberculosis. At the end of the first quarter, the death rate among white policy holders was only 65.3 per 100,000, a reduction of 10.3 per cent from the lowest figure that had previously been recorded in the corresponding period. Among the colored, the death rate was 207.8, marking a drop of 4.6 per cent from the lowest previous figure.

With the exception of scarlet fever, all of the principal epidemic diseases of childhood have shown reduced mortality as compared with the winters of both 1929 and 1928. The most noteworthy drop is that for diphtheria. All indications point to a new minimum death rate for this disease this year.

An encouraging item is a pronounced drop in the death rate among white persons for cancer. If this persists (which is by no means assured), 1930 will be the first year since 1924 to show any interruption in the steadily rising mortality from malignant growths.

The largest decreases in the death rate, as compared with the early part of last year, have been those for influenza and pneumonia; but there have also been more or less marked declines for diabetes, cardiac diseases, diarrheal complaints, chronic nephritis, and puerperal conditions. Deaths from alcoholism dropped from 175, in the first quarter of 1929, to 155 in the like period of the current year; and the death rate declined from 3.8 per 100,000 to 3.3, a decrease of 13.2 per cent.

Suicides and homicides have been a little more frequent than in the early months of last year. The death rate for accidents, as a group, is practically unchanged. Automobile fatalities, on the other hand, have gone on increasing among both white and colored policy holders. Unless marked improvement takes place later in the year the death rate for this cause will be considerably in excess of the previous maximum, recorded only last year.—*Stat. Bull.*, Met. Life Ins. Co., 11: 1–4 (Apr.), 1930.

PUBLIC HEALTH ENGINEERING

ARTHUR P. MILLER, C. E.

Bacteria of the Coli Group in the Intestines of Birds and Their Importance in the Fecal Pollution of Water—The author examined 74 birds of four groups—domestic land birds, domestic water birds, wild land birds, and wild water fowl. In 37 birds coli bacteria were detected. There were 46 strains which fermented lactose; 3 of these were not indol-forming; there were also 7 para-coli strains which were not lactose-fermenters. The absence of coli bacteria in the intestines of birds or fish can be traced to the purity of their environment and nourishment. No coli bacteria were found in the water of a mountain lake inhabited by ducks and snipe, but a passing flock of ducks polluted a pure water reservoir in Los Angeles with coli bacteria. Of the 46 strains of coli-like bacteria cultivated by the author, 78 per cent were fecal, 22 per cent showed signs of transition to *B. aerogenes*, and only 2 per cent were *B. aerogenes*. The conclusion is reached that *B. coli* is not necessarily present in the intestines of birds, but is present when conditions of life or nourishment bring birds in contact with men or animals. The possibility of the pollution of pure water by wild birds must therefore not be disregarded.—Minkewitsch, *Ztschr. f. Hyg. u. Infectionskrankh.*, 110: 506, 1929; *Tech. Gemeindebl.*, 33: 20, 1930. (From Papers of Water Pollution Research Board, England.)

Successive Separation in Sewage Disposal Systems—The author deals with the development and operation of various forms of sewage disposal apparatus. The composition of the average sewage which the various forms of apparatus are designed to render stable, inoffensive and harmless is given. Two successive separations, screening and settling, are present in almost every form of apparatus.

The development of designs of tank treatment along three distinct lines of thought is fully discussed. These lines are (1) the liquefaction of the greatest possible amount of solid and its mechanical separation in single storied tanks primarily designed for maximum liquefaction; (2) the mechanical separation of as much solid as possible in two storied tanks with maximum liquefaction of the separated solids in the lower tank; (3) the maximum separation of solids in plain sedimentation tanks without any deliberate intention of liquefaction.

The first is a development of Cameron's septic tank, and has been rigorously followed in India. The second is exemplified in the Imhoff or Emscher and Travis hydrolytic tanks. The third is developed to an advanced stage at Birmingham. The essential features of all the processes are given, together with charts showing chains of successive separations in the ordinary Imhoff, single Travis, Birmingham, septic tank and filter, Croydon and Ideal Systems. The reduction of the size of the lower chambers with corner settling pockets is advised.

The author sketches the ideal installation based on the successive separation of solids from liquids and removal at each stage as fast as they are separated. The system consists of screening, grit catching, preliminary settling of sludge, sludge digestion, preliminary bio-aeration treatment, final settlement and

sludge drying. The ideal plant contains ten separations, eight of which are successive in one chain, and two in another.—F. C. Temple, *J. Inst. Munic. Co.*, Eng., Lond., 56: 549, 1929. (From Papers of Water Pollution Research Board, England.)

Activated Sludge Process for Sewage Disposal—This is a report of a paper delivered at a meeting of the Liverpool Section of the Society of Chemical Industry. It had been established by investigation that colloids in sewage, when free from the effect of electrolytes, had an iso-electric point at a pH of 4.6; below this they were electro-positive and above it electro-negative. Electrolytes moved the iso-electric point toward greater pH. In ordinary sewage with a pH of 7.4 the colloids were electro-negative.

The mechanism of the activated sludge process was discussed and it was suggested that the intense bacterial activity so enhanced the electro-negative charge on the sludge that by virtue of the great difference in the charge it acted on the colloids as an electro-negative suspension would on electro-positive colloids.

It was suggested that greater efficiency might be gained for the process by maintaining the sewage at a pH of about 5.8 during the treatment, as the colloids would then be electro-positive and the velocity of coagulation would be increased. A method of preparing activated sludge for starting up a new plant is suggested.—E. C. C. Baly, *Chem. Age*, 1930, 22, 78. (From Papers of Water Pollution Research Board, England.)

Power Gas from Sewage Sludge—The crude sludge from the Birmingham, Tame, and Rea District Drainage Board Works is pumped to the primary digestion tanks at the Saltley works where it is retained for 3 months and then pumped to the secondary digestion tanks and thence after 2 months' retention to drying beds. A gas composed of 67 per cent methane, 30 per cent carbon dioxide and 3 per cent nitrogen, and having a calorific value of about 625 B.T.U. per cu. ft., is produced. Sludge gas drives a 34 h.p. gas engine at the Colehall works. The results of an investigation made at this plant to determine what amount of power might be expected from the sludge available at the Saltley works are tabulated. A vertical gas engine, alternator and floating gas collectors were consequently installed at Saltley.

Details are given of the floating gas collectors, which consist of reinforced concrete rafts with vertical sides and pyramids through which the gas is drawn. The estimated total available output is 10 million h.p. hours per annum, which is about five times the Board's present requirement.—Anon., *Canad. Eng.*, 57: 816, 1929. (From Papers of Water Pollution Research Board, England.)

Studies on Yellow Fever in South America. Transmission Experiments with Aedes Aegypti—Batches of *Aedes aegypti* which had fed on monkeys in the early febrile stage of yellow fever and subsequently passed the accepted incubation period failed to transmit the disease to normal monkeys in 50 per cent of the experiments. Over 80 per cent of blood transfers during this same period were successful.

Monkeys failing to show fever following mosquito bites later proved resistant to blood or tissue inoculations containing virus.

From these experiments arises the possibility of a natural development of immunity in man where ill defined cases of yellow fever exist.—Nelson C. Davis and Raymond C. Shannon, *J. Exper. Med.*, 50, 6: 793–801 (Dec. 1), 1929. Abstr. H. A. Johnson.

Studies on **Yellow Fever in South America. Transmission Experiments with Certain Species of Culex and Aedes**—Experiments were made to determine the possibility of transmission of yellow fever to monkeys both by the bites and by injection of ground-up mosquitoes of the species *C. fatigans, Aedes scapularis, Aedes serratus,* and *Aedes taeniorhynchus.*

Aedes scapularis was the only species found capable of transmitting the virus by bite. Injection of ground-up *Aedes serratus* and *Aedes taeniorhynchus* seemed to produce light attacks of yellow fever in the monkeys. There was no evidence that the disease could be transmitted by *C. fatigans* in either manner, although monkeys bitten by this species appeared to have acquired a relative immunity to the disease.—Nelson C. Davis and Raymond C. Shannon, *J. Exper. Med.,* 50, 6: 803–808 (Dec. 1), 1929. Abstr. H. A. Johnson.

Enumeration of the Anaerobic Sulphite Reducing Bacteria and the Significance of Their Presence in Water—The writer gives a very able discussion of this subject and in his summary reduces the results of his work to a small space. He concludes that anaerobic sulphite reducing bacteria, both obligatory and facultative, are numerous in feces of man, less numerous in the excreta of the horse and cow, and of varying extent in that of gulls; in feces sulphite reducers are more numerous in the vegetative states than as spores; the presence of these organisms in water indicates objectionable contamination and that the preponderance of vegetative forms shows such contamination to be recent. Vegetative forms of sulphite reducers were more resistant to unnatural conditions, including the presence of chlorine, than *B. coli.*

There is now no certainty that all sulphite reducers are non-pathogenic, but since they are likely to be of objectionable origin their presence in drinking water is to be deprecated.—B. A. Adams, *Water and Water Eng.,* 31, 369: 412–415 (Sept. 20), 1929.

A Study of the Possibilities of Transmitting Yellow Fever by Means of Stegomyia Excreta—(Title briefed.) Inoculation of *Macacus rhesus* with excreta of infected *Aedes aegypti* with consequent production of yellow fever definitely showed that yellow fever virus is present in excreta of infected aedes.

From 5 to 7 days following a blood meal on infected monkeys, yellow fever virus was found in aedes excreta. Male aedes placed with infected females were found 12 days later to have acquired yellow fever virus. Female aedes left in contact with infected males for 17 days acquired the infection as shown by inoculating monkeys.

The above results show the possibility of spreading yellow fever virus among mosquitoes without a blood meal or human host.—H. de Beaurepaire Aragao and A. da Costa Lima, *Trop. Dis. Bull.,* 26, 12: 1001 (Dec.), 1929. Abstr. H. A. Johnson.

INDUSTRIAL HYGIENE

EMERY R. HAYHURST, M. D., AND LEONARD GREENBURG, PH. D.

Toxicity of Dichloro-Difluoro Methane: A New Refrigerant—The contemplated use of the substance named in the title for domestic and commercial refrigeration and in air conditioning public buildings and possibly homes, has caused the Experiment Station to investigate the possible health hazards of the new product. The present is a brief report giving the results of studies on animals exposed for 7 to 8 hours daily for a period of approximately 12 weeks to breathing 20 per cent by volume of the vapors of the substance in air. This percentage was chosen because it had been found to produce distinct symptoms at this concentration although no indication of acute poisoning; also, such percentage represents an abnormally high value from the viewpoint of contamination of air by gases and vapors, but not high enough to reduce the oxygen content to an asphyxiating degree.

A description of the apparatus used with an accompanying diagram and tables showing the results of tests, accompany the article.

Dogs, monkeys, and guinea pigs were used in the prolonged experiment above mentioned. Dichloro-difluoro methane was found to produce mild to moderate tremor in dogs and monkeys with a gait resembling alcoholic ataxia but not unconsciousness. A tolerance was developed, as manifested by a decrease in symptoms. Guinea pigs showed no significant symptoms. Weight, blood test, autopsy findings, and pregnancy were not materially affected. No fatalities occurred among the dogs and monkeys. Those few which occurred among guinea pigs apparently had no relation to exposure.

The investigation has shown that at least 20 per cent dichloro-difluoro methane vapor can be repeatedly withstood for 7 to 8 hours daily, with but an occurrence of temporary symptoms and without signs of cumulative or permanent deleterious effects. The compound is therefore placed in the class of practically non-toxic gases (a table of toxic gases is given on an accompanying page).—R. R. Sayers, W. P. Yant, John Chornyak, and H. W. Shoaf, U. S. Bureau of Mines, *R. I. 3013,* May, 1930, 14 pp.

Warning Agents for Methyl Chloride in Refrigeration Systems—A research was made to find a warning agent for admixture with methyl chloride so powerful that if a leak should occur from a methyl chloride refrigerating machine, those present would receive an unmistakable warning before dangerous concentrations of methyl chloride and warning agent in the air were reached. The requirements, factors opposing and favoring irritants and odorants, the sizes of leaks which agents must warn against, are all considered.

The principal content of the bulletin summarizes the experimental data secured from testing a large number of substances with the general conclusion or unanimous opinion of the chemists who were connected with the problem that although several substances are very good warning agents in some respects, each has some objectionable properties. At present acrolein appears to be the best, but among other good agents are sulphur dioxide, allyl alcohol, butyl mercaptan, ethyl mercaptan, dimethyl sulphide, and chloropicrin. Preliminary tests also showed that a consid-

erable number of substances (named) were rejected for one reason or another. —The Roessler & Hasslacher Chemical Co., Niagara Falls, N. Y., Mar. 1, 1930, 31 pp.

Observations on the Possibility of Methyl Chloride Poisoning by Ingestion with Food and Water—Summary as follows:

1. No apparent signs of poisoning were caused by the average daily ingestion on 4 consecutive days of 550 gm. of ground raw beef or 200 c.c. of milk that had been exposed 15 to 75 hours to 100 per cent methyl-chloride vapor at 35° F.

2. No apparent symptoms of poisoning or changes in the hemoglobin and blood cells were caused by the ingestion of methyl-chloride contaminated water on 115 days of a total period of 171 test days. Also, no formates were found in the urine. Autopsy and examination of frozen sections, however, revealed a moderate degree of intracellular fatty degeneration affecting the ascending, descending, and collecting tubules of the kidney. Analysis showed the water to be 75 to 100 per cent saturated with an average methyl-chloride content of 0.595 gm. per 100 c.c. of water. This was the only water given the animals on 6 days of each week of the test.

3. The taste of water saturated with methyl chloride at 68° F. is sharp, sweetish, and sickening when first taken into the mouth, followed almost immediately by a burning sensation. Persons would not drink more than a mouthful or two. It was frequently refused by the animals, even though they were deprived of other water.

—W. P. Yant, H. W. Shoaf, and J. Chornyak (U. S. Bur. of Mines), *Pub. Health Rep.*, 45, 19: 1057–1065 (May 9), 1930.

Titanium Oxide Pigments—The article is principally a description of the technical processes involved in the manufacturing of titanium oxide and the associated bodies, and 15 of its applications in commerce—of chief concern being a pigment to replace lead in paints.

Titanium oxide has now become established as one of the staple pigments of commerce. It possesses a high refractive index and remarkable opacity and can be produced at a minimum cost while the supply is practically inexhaustible. In a comparison as to whiteness, standard titanium white stands at 390 points, a mixture of titanium white and barium sulphate in the same proportion at 290 points, where white lead stands at 100 points.

Recently, a composite pigment for commercial use has been prepared with a content of 50 per cent titanium oxide. This pigment has a specific gravity which is considerably lower than that of lead, so that a given weight of material spreads over a larger area; at the same time its obliterating power is remarkable. It may be combined with cement and is the only white pigment which combines great opacity with resistance to heat and chemical action. Furthermore, it is not attacked by sulphur dioxide or other sulphur gases, so that it retains its whiteness in the most impure city atmosphere. Finally it is entirely free of any poisonous or harmful properties.

Extensive experiments with rabbits and guinea pigs and even human experiments in ingesting the substance have fully substantiated its harmlessness. It may therefore be combined even in face powders and cosmetics.

In conclusion, the new pigment is not put forward as a substitute for others, it is peculiarly useful as a pigment and has a vast field of usefulness in many industries. Colored pigments may also be easily combined with it.—Noel Heaton, *J. Chem. & Indust.*, 49, 11: 143–150 (Mar. 14), 1930.

Causes of Death by Occupation—The first monograph "Causes of Death by Occupation" appeared some years ago known as *Bulletin No. 207* of the Bureau of Labor Statistics and analyzed the causes of death (among the 2,000,000 then insured) of 94,269 white males 15 years of age and older who died during the 3 years 1911 to 1913. Today

workers 20 years of age may expect to live, on the average, 5 years longer than similar workers could in 1912.

Tuberculosis has always been the predominating scourge of the American workman; but since 1912 tuberculosis of the respiratory system alone has declined over 50 per cent. Only a few conditions, like cancer, have shown a rising death rate.

The present bulletin is based upon experience with 3,250,000 white male policy holders. Of these 112,364 died during the years 1922, 1923, and 1924. As the number of insured persons in each occupation is not known the authors have used the method of proportionate mortality, the utility of which is now granted. The occupations have been classified according to the *Classified Index of Occupations* of the U. S. Bureau of Census. It is noted that after age 25 the mortality rate of the insured group increases above that of males in the registration states, which is considered largely the result of industrial hazards of one kind or another. A contrast is seen between sexes which is thought to be due largely to the absence of industrial hazard in the lives of most women.

The main part of the bulletin is taken up with an analysis of the mortality according to the occupation of some 33 commoner trades and callings followed by a chapter on the principal causes of death among the group considered. Regarding occupational diseases it is said: ". . . and yet a careful study of the experience leaves no doubt that in spite of the special precautions to discover these diseases, by far the larger number of them remain undetected." The great majority of the 321 deaths attributable to occupational diseases were caused by pneumoconiosis (including miners' asthma) and lead poisoning.

A positive association between employment and affliction is more clearly marked in the case of accidental violence, tuberculosis, the nontuberculous respiratory diseases, alcoholism, and such a strictly occupational disease, for example, as lead poisoning. Typhoid fever is generally prevalent among workers where the water supply is questionable. In regard to cancer, heart disease, and other degenerative diseases, however, the results do not ordinarily reveal a connection with any industrial hazard.

The absence of trustworthy occupational mortality statistics in the United States hinders the work of industrial hygienists, and an investigation such as this one can only partially overcome the lack of reliable data that now exists. It is therefore strongly urged that the U. S. Bureau of the Census compile and tabulate data showing the mortality of workers engaged in different occupations. The reports of the Registrar General of England and Wales give much more complete information on occupational mortality than is available in this country.—Louis I. Dublin and Robert J. Vane, Jr., *Bull., U. S. Dept. of Labor, No. 507:* 1–128 (Feb.), 1930.

An Experimental Study of Abnormalities Produced in the Organism by Electricity—This work was done in the Departments of Neurology and Electrical Engineering, The Johns Hopkins University. Plans for further studies are now in formation. The rat is a convenient animal for studying the effect of electricity upon the central nervous system, since its heart recovers spontaneously from ventricular fibrillation produced by the electric current. Series of animals were studied after application of alternating and continuous circuits of 110, 220, 500, and 1,000 volt potentials. The time that the current was allowed to flow was varied in each group. The electrodes were applied to the top of the skull and to the base of the tail.

The mortality increased in proportion

to the depth of the anesthesia. No sex differences in susceptibility to the current were found. Small, young animals were less resistant than adults. With lower voltages, more injuries were produced with the alternating than with the continuous currents, but with 500-volt potential the effects were equalized while at 1,000-volt potential the continuous current produced the greater injury. Many of the animals that survived the shock showed a paralysis of the posterior portion of the body with the subsequent development of incontinence and hematuria. This paralysis was more common with the alternating than with the continuous current. Some rats died during the first few hours from a hemorrhage in the cerebral ventricles. Many others recovered and appeared normal following the injury. The continuous current often produced symptoms of central nervous system irritation while hemorrhages were particularly common with an alternating current. A large hemorrhage in the spinal cord was found in all the rats in which the posterior portion of the body was paralyzed.

The nerve cells also showed characteristic abnormalities.—O. R. Langworthy and W. B. Kouwenhoven, *J. Indust. Hyg.*, XII, 2: 31–65 (Feb.), 1930.

Proceedings of the Twenty-fifth Anniversary Conference of the National Child Labor Committee held in New York City, December 16–17, 1929—Addresses by some 15 prominent persons are contained in this 94-page bulletin, which is procurable from the National Child Labor Committee, 215 Fourth Ave., New York, N. Y., *Publication No. 361*, Price 50 cents.

Control of the Silicosis Hazard in the Hard Rock Industries—The present paper—part I—deals with a laboratory study of the design of dust control systems for use with pneumatic granite cutting tools. There is a description of the granite cutting processes, of the tools and machines commonly used, and a classification of the processes according to dustiness, in which it is found that the greatest amount of dust is in connection with hand tools (59.2 million particles per cu. ft.), inside surfacing machines (44.0), outside surfacing machines (43.9), general plant atmosphere (20.2), lathe (17.9), polishing mill (9.0), sandblasting (6.2), saw (4.6), and movements of office employees (1.9).

Laboratory studies were made on dust control methods with a check on numerous features, such as collection of samples, air velocities, variations, air pressure, sharpness of tools, etc., and these in relation to the use of hand tools and surfacing machines.

The efficiency of experimental installations was standardized on the basis of a maximum of 10,000,000 dust particles per cu. ft. of air which was the highest permissible limit set up by Russell and his associates in the U. S. Public Health Service's study at Niagara Falls. It was found that the velocity of air flow at the tool must be at least 200 ft. per minute regardless of the size, shape, and position of the hood and the air flow through it. This value, therefore, may be regarded as a fundamental specification for hood design under laboratory conditions. For the field, it may have to be altered somewhat.

The air flow requirement for the smaller surfacing machine was found to be 315 cu. ft. per minute. A higher rate will be necessary for larger machines.—Theodore Hatch, Philip Drinker, and Sarah P. Choate (Harvard), *J. Indust. Hyg.*, XII, 3: 75–91 (Mar.), 1930.

Occupation and Health—Brochures Nos. 177–183 are included in this assignment of the *Encyclopaedia of Hygiene, Pathology and Social Welfare*,

Studied from the Point of View of Labour, Industry, and Trades. The present Brochure includes special papers upon blood changes due to occupation, clothing or garment trade, cork and linoleum industry, cotton industry, cyanogen and its compounds, cerium, and coal tar. An attached notice states that with this Brochure all trades and hazards coming under the letter "C" are now complete and ready for binding. Similar items under "A" and "B" have been completed since the publication of the Encyclopaedia began in 1925.—International Labour Office, Geneva, 1930. (World Peace Foundation, 40 Mt. Vernon St., Boston, Mass.)

The Comparative Action of 5 and 10 per cent Carbon Dioxide Mixtures as Respiratory Stimulants in Carbon Monoxide Poisoning—Using cats as the experimental animals, observations prompted the two following conclusions: First, that 10 per cent carbon dioxide is more effectual in the treatment of certain degrees of carbon monoxide asphyxia than is the 5 per cent mixture; and second, that artificial respiration should be administered to patients who are breathing but who are suffering from severe grades of asphyxia. In these persons, a brief period of artificial respiration will induce conditions favorable to the stimulation of breathing by the carbon dioxide in the inhalation mixtures.—Douglas P. Murphy and Cecil K. Drinker (Harvard), *J. Indust. Hyg.*, 12, 3: 92–98 (Mar.), 1930.

The Quantitative Measurement of Human Efficiency under Factory Conditions—Conclusions: One may summarize the conclusions to be drawn from the laboratory experiments as follows:

1. The measurement of human efficiency should involve records of both production and energy expenditure. The efficient worker is he who (a) has a high production per unit of energy expenditure, and (b) maintains physiologic equilibrium at this level of exertion.

2. In muscular work the pulse pressure (i.e., difference between systolic and diastolic pressures) and pulse product (the pulse pressure multiplied by the pulse rate) are useful measures of energy expenditure, correlating with oxygen consumption. Supposing that one has allowed for constitutional differences in blood pressure readings of two workers turning out equal production, the more efficient has (a) the lower figure for pulse product and (b) the lower figure for standard deviation in a series of pulse product readings.

3. In mental work and in emotion the pulse product is raised. Variation in pulse product follows changes in attention or emotion more closely than does any other blood pressure or pulse rate factor. Here also the more efficient worker, of two turning out equal production, will have the lower and smoother curve for pulse product. A continued high curve would indicate not so much efficiency of attention as a high degree of strain, and high fluctuations would indicate either lack of ability to fix and sustain attention, or lack of emotional control, or perhaps both.

4. There are normal diurnal variations in blood pressure and pulse rate due, in the working day, chiefly to the taking of food. Correction may be made for these variations, particularly in average curves.

—Osgood S. Lovekin (Harvard), *J. Indust. Hyg.*, 12, 3: 99–119 (Mar.), 1930.

FOOD, DRUGS AND NUTRITION

WALTER S. FRISBIE

On the Nature and Rôle of the Fatty Acids Essential in Nutrition—This is a supplement to previous work by the same authors (*J. Biol. Chem.*, 82: 345, 1929) in which it was shown that rats on a fat-free diet developed a disease characterized by a scaly condition of the skin later followed by degeneration of the kidneys.

Necrosis of the tail is a symptom and this has been further studied as well as the abnormal kidneys which appear in all autopsies. This degeneration is not the same as that due to vitamin A deficiency, for increased doses of Fraction AD (the non-saponifiable matter of cod liver oil) are without result while vitamin A-free fatty acids are effective. To determine the effect on the kidneys both high and low protein fat-free diets were fed, resulting in evidence of greater kidney destruction in the high protein diet.

An attempt was made to study the water exchange on the fat-free diet. There was found on an average a greater consumption of water, which was reduced by addition of only 10 drops of lard, or 2 per cent of the total diet. Almost twice as much water is consumed as with the controls and this excess is not voided as urine. This loss in the skin and lungs indicates some impairment of these tissues.

To determine the effect of diet on reproduction the fat-free fraction of vitamin E was prepared and given to animals on fat-free diet without noticeable effect toward increased ovulation, which is irregular or absent in the fat-free diet. Doses of curative oils such as corn oil, olive oil or linseed oil immediately restore ovulation. Males on a fat-free diet do not usually mate but when mating occurs no litters result, while the controls with 10 drops of lard mate and produce normal litters.

An attempt was made to study the curative effect of fatty acids by dividing the diet into groups containing the unsaturated acid such as linoleic, and the saturated acids, stearic, palmitic, etc. Butter and cocoanut oil represent the saturated acids which contain little or no linoleic acid and no other unsaturated acid. Olive oil, corn oil, lard and linseed oil represent the unsaturated fatty acids.

Curative methods of testing were employed after the animals had developed scaly feet and dandruff on the fat-free diets. Butter and cocoanut oil at the 5 drop level are not effective in relieving symptoms. Olive oil is intermediate, corn oil and linseed oil on a par. A study of the composition indicates that linoleic acid is the essential acid and arachidic acid may also be concerned.

Saturated acids were fed as their methyl esters in other experiments together with poppy seed oil, showing that some acid less saturated than oleic is necessary to effect a cure and again pointing to the value of linoleic acid. Lecithin was no more effective than the methyl esters of the fatty acids. This test showed conclusively that the saturated acids in cocoanut oil and methyl stearate will not promote growth or cure the skin regardless of their high food value. Butter, as much as 3 per cent of the total diet, does not cure the skin condition, again supporting the view that vitamin A deficiency is not involved. While cautioning against conclusions concerning human nutrition, it is suggested that warm-blooded animals

cannot synthesize much linoleic acid and that the same is probably true of other unsaturated acids, but that linoleic acid (and possibly others) is an essential fatty acid in nutrition.—George O. Burr and Mildred M. Burr, *J. Biol. Chem.*, 86: 587 (Apr.), 1930.

Effect of Varying Amounts of Menhaden Oil in the Diet on the Composition of the Body Fat of the White Rat. The Storage of Highly Unsaturated Fatty Acids—Reference is made to many investigations showing the importance of fat in the diet and that the body fat of the same species of animals can be much modified. Particularly it was shown in the author's report (*Proc. Soc. Exper. Biol. & Med.*, 24: 704, 1929) that feeding of 20 per cent of whale oil to white rats resulted in an equilibrium between the diet and the stored fat in 4 to 6 weeks. This work covers the effect of varying amounts of menhaden oil on the composition of fat of white rats. The oil used had an iodine number of 169.7, and the fatty acid yielded 54.8 per cent of ether-insoluble bromides. Diets containing from 0 to 30 per cent of this oil resulted in increased amounts of unsaturated acids in the body fat. Adult rats were used and were partially starved for 4 weeks by a fat-free diet to which was added a small amount of cod liver oil (4 c.c. per kg. dry mixture).

Tables show the amount of oil administered, food and oil consumption, and the weight changes. Physical conditions at the end of the experiment were good and no deleterious effects observed with 30 per cent menhaden oil.

Five rats from each group were killed and body fat rendered and analyzed. The iodine number was determined and the fat brominated. The analyses show unmistakably high deposit of highly unsaturated fatty acids fairly proportionate to the amounts administered in the menhaden oil.

The amounts of unsaturated acids deposited vary from 9.7 to 17.2 per cent and, with the 5 per cent diet, to 30 per cent menhaden oil. Since the deposited acids are more unsaturated than those of the original menhaden oil the explanation is offered that either in the metabolism of certain acids of the fish oil those of lower weight are removed and those of higher weight, that is, more unsaturated acids, are deposited, or that the unsaturated acids are further desaturated in the body by the introduction of more double bonds.—J. B. Brown and S. G. Morris, *J. Nutrition*, 2: 509 (May), 1930.

Studies of Vitamin C in Fresh and Canned Tomatoes—In view of the importance of tomatoes as an antiscorbutic, experiments were undertaken to determine the relative value of canned tomatoes to fresh, and to answer other questions involved. The curative method was employed on guinea pigs which had been fed scorbutic diet until symptoms such as "jerky run" or swollen wrists were noted. Feeding was continued 16 days, followed by autopsy.

The ration was chiefly soya bean flour, dried yeast, casein with mineral salts and butter fat. Two types of canned tomatoes, cold-pack and open kettle, were used, sterilization consisting of boiling 20 minutes in water. Green tomato pickles were prepared without spice, onion and pepper. Artificially colored tomatoes were produced by treatment with ethylene air 1 to 1,000 from 4 to 8 days.

Results show 2 gm. daily of raw tomatoes, field ripened, insufficient for recovery, which is practically complete with 3-gm. dosage. Practically complete recovery was found in the cold-pack canned tomatoes with 3-gm. dosage after these cans had been stored 9 months. Tomatoes canned by the open kettle method did not give complete re-

covery with even 4-gm. dosage, indicating loss of vitamin C by oxidation. In cold-pack, field ripened tomatoes stored 15 to 20 months, a 4-gm. daily dose was necessary. Storage loss is also shown in the green canned cold-pack tomatoes which required 5-gm. dosage after 9 months, and after 15 to 20 months this amount did not result in the same degree of recovery.

By comparison, greenhouse ripened tomatoes are not quite so potent in vitamin C as those ripened in the field. The ethylene colored tomatoes required 4 gm. for recovery, indicating that ethylene does not prevent the development of vitamin C but is comparable to the greenhouse ripened tomatoes. Green tomatoes ripened in a dark room effected practical recovery with 3-gm. dosage, showing the development of vitamin C after severing from the vine. Field matured green tomatoes were stored until soft, then fed at the 5-gm. level, which showed approximate recovery, indicating a superiority over the fresh canned tomatoes from the vine but comparable with these same tomatoes canned by the cold-pack method, indicating a slight superiority for this method as a source of vitamin C compared to the raw, green tomatoes.

The vitamin C content of green tomato pickles was found to be negligible. —Bertha Clow and Abby L. Marlatt, *J. Agri. Res.*, 40: 767 (Apr. 15), 1930.

Further Evidence for a Third Accessory "B" Factor—This author has previously presented evidence of the division of the vitamin B Complex into three components (*Biochem. J.*, 23: 689, 1929). This paper records further evidence with respect to these factors. Similar basal diets as on a previous experiment were employed and 3-pigeon-day-doses (approx. 1.0 mg.) were given each rat daily. Vitamin B_3 was obtained from the filtrate of the preparation of vitamin B_1 and was found active only in the mercuric sulphate precipitate. Details of this separation are to be published.

Two types of experiments were conducted, first, rats which were brought to constant weight on the basal diet plus vitamin B_2 ceased growth at the end of 2–3 weeks. Temporary response followed the addition of vitamin B_1 but no further response by further addition of B_1 or B_2 or both. Vitamin B_3 preparation was administered daily by mouth, and graphs indicate definite resumption of growth by the supply of B_3.

In the second experiment, rats were brought to constant weight without addition of any of the B vitamins. Vitamin B_1 and vitamin B_3 in amounts shown adequate in previous experiments were fed without increased growth even when doubled. Growth was immediately restored by the unit quantity of vitamin B_2. The suggestion is offered that the vitamin B_3 factor forms an insoluble mercury salt with mercuric sulphate. The growth curve also indicates that the storage period for vitamin B_3 is approximately 5 weeks compared to 3 weeks with vitamin B_2.—Vera Reader, *Biochem. J.*, 24: 77, 1930.

Heat Resistance of the Spores of Clostridium Botulinum—The purpose of the work reported in this article was to supply spores in large quantities for heat resistance studies. In the course of the work 10 different lots of peptic-digest medium, 12 gelatin mediums, 12 mediums in which peptone served as the basic nitrogen constituent, 4 meat mediums, and over 100 different batches of casein-digest medium with many variations, including the addition of salts and vegetable extracts, were employed for the production of spores of representative strains of *Cl. botulinum*.

Spores grown in 4 per cent peptone showed a resistance of from 1½ to 2½ hours. The addition of phosphate raised the heat tolerance to 4 hours; the

effect, however, was not constant. The addition of glucose and the increase in concentration of peptone raised the number of organisms but not the resistance. A standard casein-digest medium supplemented with Liebig's meat extract was selected as most favorable for the routine production of *Cl. botulinum* spores.

Different lots of casein medium prepared under similar conditions varied in their ability to produce heat resistant organisms. The same lot of medium consistently yielded identical results. Supplementing with different electrolytes, sand, glucose, olive oil, protein or vegetable extracts did not improve the basic substrate. Attempts to increase resistance by selection failed.

Incubation temperatures of 28°, 37° and 41° C. showed little influence on the heat resistance of the organism. The most resistant organisms were found in 4- to 8-day cultures. The degree of anaerobiosis had no evident effect on the heat resistance of the spores. The apparent heat resistance of a spore suspension increased with its density up to approximately 1 billion per c.c.; beyond this limit it was considered constant.

Spores preserved in their own liquor in the icebox and in a dry state usually deteriorate on standing. Numerous products, however, remained constant over periods of 4 months. As a result of 46 resistance experiments on small spore samples, an average heat tolerance of 4 to 4½ hours was shown.

When the results from 44 pools prepared by the Sharples centrifuge are considered, two maximums, at 3½ and 5 hours, are evident.—E. W. Sommer, *J. Infect. Dis.*, 46: 85 (Feb.), 1930.

PUBLIC HEALTH NURSING

EVA F. MACDOUGALL, R. N.*

The Public Health Nurse and Communicable Disease—Any public health nurse can tell you that some of the families most needy of good nursing care are often those in which one or more children are ill with a communicable disease. Usually the mother has to give nursing care in addition to her other heavy duties, if she has a large family, and this is so much more difficult if the house is small and there must be isolation of the patient and careful technic in guarding the rest of the family and herself. This is one time when the public health nurse is needed badly; yet many visiting nurses in the smaller communities are not allowed to give bedside care in these cases for fear the public will feel that they will carry the disease from house to house, though no case has ever been reported in which a visiting nurse has carried an infection.

Again school nurses many times visit the homes of school children ill with a communicable disease. One nurse not long ago visited a school child ill with measles. The mother escorted her into the darkened room (which the National Society for the Prevention of Blindness says should not be darkened) and sat in a chair by the sick boy, holding her six months' old baby in her lap. She was eager to take all the nurse's suggestions about the nursing care of her son, and was much surprised that

* Please send printed matter or other material relating to public health nursing to Eva F. MacDougall, 126 State House Annex, Indianapolis, Ind.

she should not take her baby into the sick room.

It would be ideal if school nurses, board of health nurses or visiting nurses could visit every home in which there is a case of communicable disease and after demonstrating nursing care to the mother leave one of the pamphlets explaining the care and hazards of that particular disease. These pamphlets are attractively written and furnished by some of the life insurance companies, or state health departments. Some few mothers may not read them, but more will—and pass them on to the neighbors. An alert nurse will say, "Be sure and have your husband read it, too."

It would be a God-send to any public health nurse if she could also leave a pamphlet with the mother such as has just been published by the Iowa State Board of Health, *Management of Cases of Communicable Diseases in Isolation or Quarantine at Home or in Hospital*, written by the Directors of the Division of Preventable Diseases and the Division of Public Health Nursing. Most of the pamphlet "deals with the arrangement of the patient's room, the precautions to be taken to prevent the spread of disease, and the method of disinfection to be used during the course of the illness and after recovery." It is written very plainly and attractively with plenty of illustrations; any mother can understand it.

The physicians and health officers complain that so many families go to great length to escape or avoid quarantine. It is probably because most of them do not really understand the need of it. This same pamphlet "contains certain definitions and citations of the laws and regulations pertaining to notification and the placing of a warning sign on the premises."

Surely the nurse who has visited a case of communicable disease, has helped to interpret the doctor's orders in regard to it, has demonstrated nursing care and left a pamphlet like this one from Iowa, together with a specific pamphlet about the disease, has done a great deal to protect the patient and his family and the community, and to make it easier for the physician and health officer.

Public Health Nurses in Michigan, 1929–1930—

Number of county nurses (exclusive of Children's Fund)	56
School nurses	163
Tuberculosis nurses	28
Industrial nurses	58
Visiting nurses	62
General Public Health nurses	89
Children's Fund of Michigan nurses	14
Metropolitan Life Insurance Co. nurses	23
State Department of Health nurses	9
Total	502
Number of counties employing nurses	31
Financed entirely by Boards of Supervisors	19
Financed by Red Cross and supervisors	6
Financed by tuberculosis funds	9
Counties having nurses from the Children's Fund of Michigan	9
Number of County Health Units financed by Children's Fund	9
County Health Units financed by Supervisors, Rockefeller Foundation and State	5

The nurses with the Children's Fund of Michigan are all doing county work and the majority of the tuberculosis nurses have a county wide program.

The above figures do not include the staffs in Detroit.—*News Letter to Public Health Nurses*, Bureau of Child Hygiene and Public Health Nursing, Mich. Dept. Health, May, 1930, p. 5.

The Staff Education Plan in Montreal—Weekly conferences are held in each district in the Montreal District of the Victorian Order of Nurses. Plans are made ahead of time to have members of the staff take a definite part, in order that the conferences may not become dominated by the supervisor.

Last winter the nurses prepared a series of ante-natal talks for mothers to

be given at the district conferences. They chose their own topics and prepared 4 papers with some help from the supervisor. This gave them much needed practice in planning group talks.

We quote *The Canadian Nurse* of February, 1930, as to why the plan is of value:

1. To the Staff Nurse:
   (a) Because it provides her with the incentive to do considerable reading;
   (b) The opportunity to do some creative work;
   (c) The opportunity to do some public speaking.
2. To the Supervisor:
   (a) It enables her to evaluate the teaching ability of the nurse;
   (b) To select nurses best suited to answer the call for "health talks";
   (c) The opportunity of knowing, and consequently being the better able to strengthen, the weak joints in her armour.
3. The whole group is benefitted by the discussion which follows and the new nurses on the staff are helped and stimulated.

To make reference reading easier a committee, appointed each month from the staff, looks through the magazines and tabulates and files all articles that they consider will be of value to them in their work.

No extra time is allowed for any of this work. If possible, some of it may be done in office time, and the stenographer does what she can to help. The benefits that accrue to the nurse should more than offset the disadvantages, and most of the nurses are willing to admit that the time is well spent.—Staff Education in the Victorian Order of Nurses, Canada, *Internat. Nurs. Rev.*, Mar., 1930, p. 206.

We Need a Higher Standard of Admission to Nursing Schools—Of the 524 nursing schools situated in the northeastern states comprising New England and the Middle States 56 per cent require only 1 year of high school for entrance, 28 per cent require 2 years, 2 per cent require 3 years and 14 per cent have a 4-year requirement.

"One of the three great questions involved in the training of nurses or any other group of professional workers is the question of their preliminary education." Twenty-nine out of each 100 students in these 524 nursing schools had not enough preliminary education to enter any normal school in these 10 states. However, 68 per cent of the total students accepted in the schools had had 4 years of high school education, though this standard was not required in the states in which they were located.

Nursing leaders agree that 4 years of high school should be one of the standards of admission to a nursing school, for as Dr. Burgess says in *Nurses, Patients, and Pocketbooks*, "The young women who in this day of free education have not had the ambition, energy or good sense to carry them through high school, are not the material at all which we should expect to make nurses."

Maryland, Oregon, Rhode Island, Utah and Washington require 4 years of high school for admission to their nursing schools, and Colorado, Alabama, New York and Idaho have recently passed laws requiring high school education for admission; all other states require less.

An intelligent public opinion must be produced on the facts in training schools as they are operated today, and nurses must lead in the reforms that must take place in the nursing profession; but it is futile to expect that any discussion of nursing school needs will have any effect upon the situation unless it "overflows the banks of your professional stream and engulfs the general public."—E. Everett Cartwright, This and That in Nursing Education and Practice, *Am. J. Nurs.*, XXX, 5: 617, 618, 619, 624, 627 (May), 1930.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN*

A Neighborhood Demonstration—A Clean-up Demonstration was conducted by the various community and social agencies connected with the Lower East Side Community Council in New York City. They chose a small area of two square blocks—from Jefferson to Rutgers Streets and from Madison to Cherry Streets—so that the checking up would not be impossible.

The drive started off with all sorts of meetings—interested agencies, the landlords, fathers and mothers, and children, and the Madison House Clubs, etc., all eager for action.

People were very much interested, fathers being particularly responsive and anxious to help in inspection, for which purpose they received letters as credentials. The children were held responsible for cleaning houses and had daily reports to make on printed forms. They were given a point system for grading the homes they described. The schools held an essay contest in which all the classes from 4B to 9B participated, each class getting a button, and a medal being given to the best essay in each grade—all this at a formal assembly.

One hundred and fifty organizations sent out trained visitors with sets of printed instructions so that each family in the 1,356 apartments of the district was visited.

The landlords agreed to help, improving hallways, shaftways, etc., feeling, too, that it would help them to keep their houses filled.

The educational side of the demonstration included the distribution of informational pamphlets, display posters, movies, lectures, lantern slides, essay contest, and score cards, badges, etc., programs at church and Hebrew schools, newspaper publicity, and a printed report of the demonstration. The League of Women Voters issued a pamphlet on violations of the law involved.—Babette Langsdorf.

Welcome to a Guest Editor—Welcome to Dr. H. E. Kleinschmidt, health education director of the National Tuberculosis Association, who will edit this department in the September and October issues.

The year round editor plans to sail eastward July 16, reaching New York again September 19. The main objectives are the International Hygiene Exposition at Dresden and the social museums in Munich, affording unequalled opportunities for the study of German methods of graphic presentation of facts and ideas.

Dr. Kleinschmidt, who has kindly agreed to carry this department, has had a more varied experience in health education, probably, than anyone else. In two national and one city health agencies, and a state department, he has produced motion pictures, exhibits, posters and other materials; has talked and written on the subject; and has been a pillar of the popular Health Education Section of the A. P. H. A.

No instructions have been passed on to Dr. Kleinschmidt. We count on a different treatment of the subject in those two issues. Much, of course, depends upon what is sent by health workers to his address, 370 7th Ave., New

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

York, N. Y. He will welcome questions and problems, and those good samples of your publicity materials and descriptions of devices and methods.

Early Diagnosis Campaign, 1930—The campaign succeeded this year in reaching very effectively the medical profession through the distribution of the diagnostic manual, "Childhood Type of Tuberculosis." Though the book was an expensive printing job, it was necessary to print 40,000 copies to meet the demand. Free copies were made available to the 4,500 senior medical students. Comments from medical teachers, specialists, and practitioners were numerous and universally favorable.

Dr. Algernon B. Jackson, professor of hygiene of Howard University, Washington, D. C., was engaged to make a special lecture tour to 12 Negro normal schools and colleges in the South.

For Negro groups, there was a Negro poster like that for general groups except that it was illustrated with a portrait of a Negro child. This poster was popular greatly beyond expectations, and for no other reason, we believe, than that it featured the Negro child. In many places, tie-ups were made with Negro Health Week.

Radio announcers and advertisers were furnished with announcements and short talks. A considerable number made use of them. One station asked for additional copy because the previous copy had proved so popular. We found also that, while it was difficult to secure good hours on the larger stations, our local secretaries succeeded in getting liberal allotments of time on local stations. One state association arranged for a series of ten 5-minute talks on successive days by different speakers.

The 6,000 24-sheet billboard posters were favorably received, but for the first time in our experience protests against the use of the billboard in general were heard from various parts of the country. A number of persons and organizations deplored the fact that tuberculosis associations encouraged the perpetuation of the billboard by using them. The National Association has not yet taken a stand on the question nor adopted a definite policy.—H. E. Kleinschmidt.

Health Education in a Professional Magazine—In *Public Health Nurse*, 370 7th Ave., New York, N. Y., June, 1930. *35 cents.* "The Nurse's Message of Child Health to the Family" (includes interpretation of printed publicity); "Child Study Program Applied to a Public Health Organization" (includes child study and health discussion groups); "The Nursery School—A Learning-Living Place" (includes "learning through living"); "New York Experiments in State-wide Staff Education" (Division of Health Nursing, State Department of Health); "Community Organization for Health" (includes the education of women in England); "Responsibilities and Duties of Advisory Board Members" (includes plea by a board member for more education of board members); "Report of the New England Health Institute"; "One Day Institute Board and Committee Members' Section, Rhode Island"; "Board Members' Institute, Syracuse"; *and* "A Year-Round Publicity Program for Public Health Nursing Organizations."

Why Not the Silent Film?—"Ill blows the wind that profits nobody."—Shakespeare.

The advent of the Talkie has opened new and heretofore unavailable opportunities to the tuberculosis and public health movement in that the silent film field has been abandoned by the commercial groups and is now available for complete and non-competed exploitation by the educational bodies.

Whereas Hollywood previously

crowded the non-entertainment film out of the picture and allowed it only a small margin of usefulness, now, since the movie has found its voice, we are free to utilize the commercially abandoned old-style cinema. If we now appreciate our opportunities and hasten to embrace them, we will add a valuable instrument to our educational means.

The recent and phenomenal development of the amateur movie, the perfection of the amateur movie camera capable, because of its rapid lenses, of taking pictures in ordinary light, the production of simple lighting facilities which can be attached to practically any lighting circuit, the availableness and cheapness of the 16 millimeter reversible film purchasable at less than $5 per 100 feet, including all processing, and the perfection of the amateur projection machine, and screens which give good pictures make the exploitation of the silent film easier and cheaper now than before.

The spheres of exploitation of the silent film still remain wide. The public school assembly, the classroom, the mothers' meeting, the boys' and girls' club, church groups, the union meeting, all of these and many others offer opportunities for the showing of silent films.

Amateur equipment is relatively inexpensive, easy to handle and easy to transport. The camera need not cost more than $100—the film would cost less than $5 per 100 feet, $20 for 400-foot reels, equal to 1,000 feet of standard 36 millimeter film. (Projection time approximately 16 minutes.)

Projection machines cost from $50 to $250. Sixteen millimeter films are of the safety type—that is, non-inflammable. The films are easy to handle and to store. Neither license nor booth is required for projection. Excellent screens of the glass bead variety are available to receive the projected picture. These also are easily transported. Several lecturers employed by the Colgate-Palmolive Organization have for several years made the circuits of the schools delivering lectures on oral hygiene and have carried without difficulty their projection machines and films.

The amateur films offer new opportunities which the professional films did not. Thus, since nearly every city has a film service where the 16 millimeter films may be rented, these services can be exploited for the distribution of health films. "Jinx," "The Kid Comes Through," and a number of others of our health films can be converted into the 16 millimeter size and loaned for projection at private homes.

Schools could be persuaded to make their own health films on a project method: the English, biology and hygiene departments could supply the plot, the dramatic director choosing and directing the cast, the manual training department supplying sets, etc., and the whole school coöperating in finishing the project.

The costs of the project could be recovered through admissions charged at the showing of the film. The interest of the parents could be enlisted in the review of the film.

There are a variety of ways in which this last opportunity could be exploited. Pantomime and puppets could be used in the making of health films. Prize competitions might be held among the schools for the best film produced. Health organizations could coöperate with schools by making available, on a loan basis to the schools requiring them, motion picture cameras, lighting facilities and projection machines.

Visual instructions in health could thus be promoted and recognized by all. There are items which can best be presented by the silent film. The health movement never adequately exploited the opportunities represented by the motion picture but now a new opportunity is offered to us.—Iago Galdston, M.D. (Mimeographed copies of above

free from National Tuberculosis Association, 370 7th Ave., New York, N. Y.)

Dr. Galdston says so well and in such specific detail what we have hinted at in this department. We believe that health and social welfare agencies have had thrust upon them practically a new medium and a new method. The growth of the amateur movie club seems to point the way. We look forward to local, state, and national health and social welfare movie competitions. Later there will be discussion in this department of the use of amateur movies.

The best single source of information is the Amateur Cinema League (and its magazine, *Movie Makers*), 105 West 40th St., New York, N. Y.

A second source is the *Educational Screen*, 5 South Wabash Ave., Chicago, Ill., with an amateur movie department edited by Dwight R. Furness, who is active in the Social Work Publicity Council. Write to both above addresses for sample copies.

Publicity Task of Mental Hygiene—From Germany Dr. Hans Roemer brought to the International Congress for Mental Hygiene a description of the opposition to up-to-date treatment of the mentally diseased which might apply very well to other countries. To public opinion, he says, the mentally diseased individual is unpleasant, undesired, inconvenient. He is looked upon as burdensome, annoying, even sinister.

Prejudice is directed not only against the insane but against the asylum and the alienist. These prejudices of public opinion that, largely in the form of antiquated laws, have been carried over from obsolete stages of development to our own time have become great hindrances to progress in care of the insane.

On the other hand there are some rays of light that promise a better future. In the important field of the administration of social service and of law, the psychiatrically oriented system of an active social pedagogy has begun to regulate the relations of the conspicuous psychopath to society. This new social, educational orientation will, through public opinion, gradually prepare the way for improvement in the treatment of the insane.

We alienists, Dr. Roemer continues, see clearly laid out for us the road to progress. We have to win for the care of our patients a place in the realm of active social pedagogy within the field of health service, and to win over public opinion by means of systematic enlightenment.

The removal of the hindering prejudices that public opinion has dragged along from past days can be accomplished by psychiatric enlightenment in connection with the general education of the people in hygiene.

In the solving of all these problems we must assure ourselves of the coöperation of the members of private social service organizations who have already so successfully won the far reaching help of public opinion in other common goals. —Dr. Hans Roemer, To What Extent Does Public Opinion Help, and to What Extent Does It Impair the Work of Mental Hygiene? First International Congress on Mental Hygiene.

MAGAZINE ARTICLES

"Cinderella's Slippers," by G. F. Alsop, M.D. *Woman's Journal*, 171 Madison Ave., New York, N. Y. June, 1930. *25 cents*. Feet, shoes, health.

"Fat or Thin Women," by Brenda Ueland. *Saturday Evening Post*. May 10, 1930.

"Right from the Heart," by R. E. Wadsworth, M.D. *Collier's*. May 24, 1930.

"Sensible Sixties," by S. G. Blythe. *Saturday Evening Post*. May 17, 1930.

"The World's Future Population," by R. E. Kuczynski. *New Republic*, 421 West 21st St., New York, N. Y. May 7, 1930. *15 cents*.

BOOKS AND REPORTS

The Story of San Michele—*By Axel Munthe. New York: Dutton,* 1929. 530 pp. Price, $3.75.

This autobiography is entirely different from any which the reviewer has ever read. It is the story of a Swedish physician who graduated in Paris and acquired a large practice, becoming a fashionable physician. He always found time, however, to look after the poor in an Italian as well as a Swedish colony. His outstanding characteristics seem to have been a clear insight into human nature, an intense love for animals of all kinds, especially dogs, and a revolt against the social injustices. The book is not so much a detailed description of his life as a succession of dramatic incidents. His description of the cholera epidemic in Naples is ghastly, as is his account of the diphtheria and scarlet fever outbreaks among the poor Italians and Swedes in Paris.

The book is beautifully written. The author has a fine dramatic instinct. His description of death, which he personifies, as he has seen Him in the wards of the hospital, on the battlefield, and elsewhere, is most dramatic. He was a student of Charcot's, and apparently one of that great man's favorites, though he offended him later. He attributes his success largely to the influence of his teacher. He found, as do most physicians who handle nervous diseases, that many of his patients were suffering from imaginary diseases, and it is quite amusing to read how he substituted "colitis"—whatever that term meant—for appendicitis, which was then the fashionable ailment, and how he cured these cases by getting his patients—usually rich and idle women—interested in something outside of themselves—a dog in one case, making dolls for poor children in another, etc.

Apart from the intense interest of the story itself, the book will recall to all physicians, particularly those specializing in nervous affections, incidents in their own lives. Eventually the author broke down under the strain, bought the retreat known as "San Michele," from which the title is derived, where he established himself, founded a retreat for the animals and birds he loved so well, and reconstructed some of the relics of Roman civilization which abounded in the ruins. After a rest he recovered, and for some years practised in Rome during the fashionable season, becoming the fashionable doctor of that city as he had been in Paris. We understand that the proceeds from the book will be given to the Society of Naples for the Protection of Animals.

It is hard to praise this book too highly. The introductory chapter is difficult, but from that time on, one's interest is held without a break.

M. P. RAVENEL

The Diagnosis of Health—*By William R. P. Emerson, M.D. Appleton,* 1930. 272 pp. Price, $3.00.

The most refreshing points of Dr. Emerson's new book are found in the definite start and goal he sets up for the individual who reads that book with a view to bettering his own health. Add to those points the fact that the writer simply and convincingly sets forth how to proceed from that start to that goal. One can understand the satisfaction any individual floundering about in search of health may get from this volume.

In his Part I, Dr. Emerson immedi-

ately puts the emphasis where it belongs —in a book carrying this title—on health; not on disease cure, treatment, or prevention. The various chapters of this part interpret health rating, signs and essentials of health, understanding and use of the weight table, the individual's history approached from the health angle rather than the disease angle, health intelligence as a factor in health building—all developed with a vision reaching far beyond the diagnosis toward the follow-up, leading in the direction of health—positive.

Part II, Training for Physical Fitness, very logically presents the analysis of certain procedure and results as observed in actual class study and experiment in nutrition, in work, in rest, in recreation, and in health habits in their relation to individual health. As Dr. Emerson says, " The whole object of the class is to help the student help himself." The reader is quite likely to feel, also, that the object of those chapters is to help the individual help himself, wherever he is.

Part III, Problems in Health Diagnosis, covers certain conditions found to exist in groups and with individuals, and how those conditions have been handled or are waiting to be handled to the increased health of the individual.

In addition to the clarity with which these three divisions of Dr. Emerson's book point to the road the individual should travel toward his own health, *Diagnosis of Health* also gives pointed evidence that all such increase in individual health necessarily makes for an increase in all public health and general public welfare. LENNA L. MEANES

What Is Eugenics?—*By Major Leonard Darwin. New York: Galton,* 1929. Price, $1.00.

This little volume is practically a condensation of the larger book published in 1926 by the same author, *The Need for Eugenic Reform.* Major Darwin is the greatest authority on the subject of which he treats in the world today, and what he writes is worthy of close attention.

The book can be commended for general reading, professional as well as lay.

M. P. RAVENEL

Shattering Health Superstitions—*By Morris Fishbein, M.D. New York: Horace Liveright, Inc.,* 1930. 245 pp. Price, $2.00.

The number of superstitions discussed in this book exactly equal the variety of pickles of a certain brand. Of the fifty-seven superstitions all but two are demolished. These two which survive on some basis of fact are—that brainy people have big heads; and that rheumatic joints, like the weather bureau, are sometimes reliable in forecasting changes in the weather. The book has fifty-seven chapters—one superstition per chapter.

Dr. Fishbein takes us on a tour of the darker recesses of the human mind which lie off the paths of everyday expression. Apparently there are still bats in many human belfries.

There is some evidence of hasty preparation, which is not to be wondered at considering the enormous weekly output of this very prolific writer.

In discussing smallpox on page 202 he says, " Essentially, vaccination is the means of giving the person a mild attack of the disorder." According to Rosenau, smallpox may be converted into cowpox by passing variolous matter through calves, but when thus established it remains fixed and never reverts to smallpox. Since modern vaccination requires the use of bovine virus, the author's definition might better apply to the Chinese method of insufflation of human virus into the nasal cavity. The hope there is to give the person a mild attack of the disorder.

In discussing the transmission of disease causing organisms by the air route,

the wisdom of excluding the following statement may be questioned: "Nowadays it is generally recognized that few diseases are spread in this way, and there is even beginning to be some doubt that moist droplets expelled from the nose and throat will carry with them the germs of disease sufficient in number to affect other persons." Fortunately, the author adds, "In the interest of safety against tuberculosis, pneumonia and other diseases affecting the lungs particularly it is best for people to continue to cover up each cough and sneeze."

W. W. PETER

The Immunology of Parasitic Infections—*By William H. Taliaferro, Ph.D. New York: Century,* 1929. 414 pp. Price, $6.00.

This book fills a distinct need in the fields of immunology and parasitology, for hitherto there has been no collection of immunological contributions in parasitology, to say nothing of an interpretation of many of the findings. The purpose of the book is best stated in the words of the author in his preface:

> Besides stimulating interest in this field I hope that the present work will hasten the incorporation of these experimental data into both parasitology and immunology where . . . it has been largely neglected. By achieving this the parasitologist will undoubtedly gain new concepts . . . and the immunologist can obtain unique material for certain immunological questions.

The author further points out that the zoölogist's concept of zoöparasitism differs in its viewpoint and in its use of certain terms from the concept of bacterial parasitism held by bacteriologists and workers in medical fields by whom most of the work in immunology has been done.

The arrangement of the material makes it especially available to readers interested in special fields of investigation. After an introductory chapter dealing with parasitic infections in general and a chapter describing the various phenomenons used in studies of immunity, various parasitic diseases are considered in detail from the standpoint of the immunological responses they provoke in the host. Of particular interest are the chapters on the protective and curative actions of immune serums and hypersensitiveness and cutaneous tests used for diagnosis. Much misunderstanding has existed regarding the protective and curative action of immune serums because of the conflicting nature of the reports. By collecting them all and criticising them from the point of view of the parasitologist, Dr. Taliaferro has made a contribution of considerable value. The bibliography requires more than passing mention, for it is unusually complete and the references have been given in detail in such a manner as to make them most useful to the student and investigator. Likewise, the index has been carefully done and is exceptionally complete.

N. W. LARKUM

Factors in the Sex Life of Twenty-Two Hundred Women—*By Katharine Bement Davis, Ph.D. New York: Harper,* 1929. 430 pp. Price, $3.50.

The value of this book cannot be overestimated as regards a new fund of knowledge, and the possibility of the application of that knowledge in the field of social hygiene. It is enlightening in so far as it gives a better insight into the sex life and sex motives of at least one group or a representative number of such a group of women. It is interesting coming at this time when the trend in modern literature, the stage and the screen is toward the discussion of more and more intimate sex relationship.

To say that its fund of information is exhaustive would be overestimating the book and underestimating the complexity of the sex in question. A group of 2,200 women, most of them college graduates and nearly half of them en-

gaged at one time or another in teaching, does not represent a cross-section of American womanhood. However, the histories supplied by these women do give a definite understanding and a definite knowledge concerning the sex life within their own social and educational spheres. As the author herself states, the statistics set forth by this group will hardly hold for a similar representation of women from other walks of life.

One of the results of greatest importance in this investigation, to my way of thinking, is the proof of at least reasonable success in using the questionnaire method of compiling statistics. To be sure, religious training, social environments, education, and many other factors play a part in the correctness of answers to such inquiry. Subconscious, as well as conscious inhibitions modify their exactness. On the whole, however, it would seem that information was honestly given and I truly think that the success of this work opens the way for vast fields of investigation through the avenue of the anonymous questionnaire method.

LOUIS E. SCHMIDT

Sewerage and Sewage Disposal. A Textbook—*By Leonard Metcalf and Harrison P. Eddy. (2d ed.) New York: McGraw-Hill,* 1930. 783 pp. Price, $6.00.

The second edition contains much new material, bringing the subject matter quite up to date. It comprises 783 pages, an increase of 185 over the first edition, 343 of which are devoted to sewerage and 400 to sewage and sewage disposal. The whole has been rearranged and in large part rewritten. In the first chapter will be found a brief but excellent historical review of the entire subject with an outline of the principles involved, including those of plumbing.

The problem of runoff is dealt with in Chapter III with more thoroughness than the writer has seen in other textbooks, explaining the application and importance of recognizing the "zone principle" in estimating storm flow by the rational method—a matter frequently ignored by the practicing engineer.

If carried out in detail the computation is somewhat laborious and the authors point out that the curves shown in Figure 22, based on a rectangular area with a length equaling four times the breadth, will give reasonably satisfactory results with ordinary collecting areas, while, for preliminary estimates without adequate rainfall data, the McMath formula, judiciously applied, serves an excellent purpose.

Much fresh material will be found in the chapter on the Hydraulics of Sewers, such as "banking" on curves, nonuniform flow near outlets having a free discharge, backwater, the hydraulic jump, the Venturi flume and chemical methods of gaging—subjects not always found in textbooks on sewerage.

Particular mention should be made of the treatment of side weirs and pumps (Chapter VI), loads on sewers (Chapter IX) and the chemistry of sewage (including a discussion of hydrogen ion concentration).

Dilution is adequately treated in Chapter XII, taking advantage of the excellent experimental work recently carried out by the U. S. Public Health Service on the Ohio and Illinois Rivers. The still more recent results of experiments in dilution and the dispersion of sewage discharged from submerged outlets at Los Angeles and other California cities were unfortunately not available at the time of publication.

In speaking of screens (Chapter XV), the authors say: "The term *screen* should be limited to the type employing wire cloth or perforated plates." What are commonly called *bar screens*, such as those installed at Hamburg, Frankfort, and London, are classed as *racks*.

If these have a clear opening over 2″ in size they are designated as *coarse*; with spaces of 1″ to 2″ as *medium*, and if less than 1″ as *fine*. Screens with openings ¼″ or more in size are *medium* and those of smaller size *fine*. Regarding efficiency tests for screens, the authors state (p. 503):

> Whether it is practicable to ascertain, even with approximate accuracy, the screen efficiency by determining the suspended or settling solids in the sewage before and after screening is doubtful, for a very large proportion of the substance removed, especially with coarse screens, is of such a nature that it cannot be sampled fairly by practicable methods.

Skimming tanks, which are a rather recent innovation in sewage works, are also described in Chapter XVI (pp. 513–516).

Why the term "Sedimentation Basin" is used in the caption to Chapter XVI instead of "Sedimentation Tanks," as in the following text and as commonly used in practice, is not clear.

Referring to the activated sludge process (Chapter XVIII), a distinction is made between Diffused-air Aeration and Mechanical Aeration by denoting the latter as Bio-aeration, confining the use of Activated Sludge to the former. Air cleaning and contact aerators are given the prominence they deserve in dealing with the subject of activated sludge.

The final chapter (XXI) on Financial Considerations will be found valuable to the inexperienced engineer planning the installation of sewerage works. The methods of estimating, the significance of index numbers, overhead expense, contractor's profit, engineering costs and interest during construction, in addition to unit prices, are explained and given due weight.

At the end of each chapter references to original sources of information are given and, where desirable, practical examples are worked out as a guide to the method to be followed.

The book contains a fund of information brought up to date in a clear, concise style. Having received the scrutiny of Professors Richard G. Tyler and Gordon M. Fair as well as other competent authorities before presentation to the public it will serve as a safe guide to the practicing engineer as well as the student, for whom it is especially intended.

The general make-up of the book is excellent, the illustrations are numerous, well-selected and clear, and there is an index of 38 pages. It will serve as a convenient book of reference and a worthy successor to the many treatises on sewerage that have appeared since those of Latham and Adams.

KENNETH ALLEN

Through the States with a Seeing Eye—*By Richard J. A. Berry, M.D., F.R.C.S., F.R.S. (Edin.). Bristol: John Wright and Sons, Ltd.*, 1930. 200 pp. Price, $1.75.

This delightfully written little book is an account of a trip through Canada and the United States made by the author as the guest of the Rockefeller Foundation. Professor Berry certainly has a "seeing eye," and what we are unaccustomed to expect from an Englishman—a keen sense of humor. He shows more knowledge of the history of the United States than many of the natives possess. He cannot help poking a little good natured fun at us over having so many largest cities in the world, so many most beautiful streets in the world, etc. One cannot but regret that he did not include some comments on the various medical schools he visited.

The 25 chapters were broadcast over Australia in an attempt to create friendship for "The States." His comments on prohibition are particularly sane and to the point.

Altogether, the book can be unreservedly recommended. It does everyone good to get the other fellow's point of view of himself once in a while.

M. P. RAVENEL

Values and Methods in Health Education—*By Walter Frank Cobb, M.D. Evanston, Ill.: Row, Peterson & Co.,* 1929. 362 pp. Price, $2.00.

The ambitions and difficult purpose and plan of this book as set forth in the preface should be fully accomplished:

> The school's program of safeguarding the health of the child devolves chiefly upon the teacher and for her this book is primarily written. In it the study and practice of health essentials are made matters of everyday living, something the pupil can understand and use, for the principles that govern health are, in themselves, of little value to him unless he is trained to appreciate them and to put them into practice. . . . How health instruction may often be correlated with lessons in history, geography and other subjects is pointed out.

Each chapter is divided into two distinct parts. The first gives a concise, accurate and very readable statement on a single subject concerning health; the second provides detailed instructions how to put the idea across to the child. The suggested pictures, tricks, games, booklets, posters, diagrams, slogans and "healthgrams" are clever, well illustrated and should be effective in the hands of a conscientious teacher. It is evident that the author realizes the fact that physiology "as a subject to be studied from the point of view of animal and mineral matter is usually uninteresting to healthy, active, carefree boys and girls," and makes every effort to teach "positive health" and the "why" of hygiene.

The most up-to-date knowledge of all branches of public and private health, including ventilation, serum treatments, mental hygiene, and even sanitary engineering and community health programs, is presented in attractive form with a constant emphasis upon keeping well rather than preventing disease. In fact the teacher is warned to avoid too much zeal in presenting the details of germs and sickness because "wherever we begin trying to be 100 per cent perfect in health matters, there is a danger of developing notions about disease which may finally affect us as unfavorably as would the disease itself." The teacher is also frequently admonished to practice what is preached and to give due heed to her own health both for the sake of herself and the effects upon her pupils.

The information presented is simple and accurate. We are given the story of the Chinese doctors who for centuries have been paid for keeping people well. There appears to be no basis of fact in this legend, but it so well illustrates the point as to be almost justifiable—like poetic license.

The suggested classroom methods are evidently designed for children in the lower grades. There is no reason why the more advanced half of the book could not be separated, illustrated and made a textbook for high school and a handbook on health for the public. Each chapter is followed by references for further reading which makes it possible to go into every subject in greater detail.

This book should be of real value not only to teachers but also to those public health workers whose duty it is to present their cause to the public in simple, graphic form. JOHN HALL

Gewinnung und Kontrolle der Trinkmilch—*Von Dr. H. H. Boysen. Verlag der Molkerei-Zeitung. Hildesheim:* 1929. 77 pp. Price, $.50.

This is a booklet in which an attempt has been made to emphasize the important facts concerning the production and control of milk supplies from a hygienic standpoint. More than half of the book is devoted to a translation into German of portions of *Standard Methods of Milk Analysis,* of the American Public Health Association. The illustrations are better than in our edition of the above. If brief and pertinent statements are desired they can be found here. JOHN F. NORTON

The Hygiene of the School Child—*By Lewis M. Terman and John C. Almack. Boston: Houghton Mifflin,* 1929. 505 pp. Price, $2.50.

This text, designed for the use of teachers' colleges and teachers, is a thorough revision of a text issued fifteen years ago under the sole authorship of Dr. Lewis M. Terman.

It is divided into five major parts: I—Educational Hygiene; II—The Facts and Principles of Child Growth; III—Growth Disorders, Defects, and Disease; IV—Preventive Mental Hygiene; V—Special Aspects of Educational Hygiene.

Part II should have peculiar significance to school administrators, and to those specializing in the health of children. Part III contains much material which would be peculiarly valuable to nurses and doctors interested in school health supervision, and to teachers and administrators handling special classes for handicapped children.

Part III should be read by every teacher, not only that he or she may keep abreast of this rapidly expanding field of health and education, but that the information may be used in the daily contact with pupils entrusted to them.

This valuable text should be a part of the professional library of school nurses and physicians, and of teachers and school administrators.

CHARLES H. KEENE

A Handbook of the Mosquitoes of North America. *Their Structure. How They Live. How They Carry Disease. How They May be Studied. How They May be Controlled. How They May be Identified*—By Robert Matheson. *Springfield, Ill.: Charles C. Thomas,* 1929. Price, $5.50.

A clear, concise treatise on the North American mosquitoes, especially well organized for the student. The first four chapters on Characteristics of Mosquitoes, Biology of Mosquitoes, Mosquitoes in Relation to Human Welfare and the Problem of Mosquito Reduction, will prove most valuable to the practitioner. The last three chapters, on collecting and classification, are a little beyond the average practitioner, though very well presented for the systematic student of mosquitoes.

The photographs of breeding places and illustrations of anatomical structures are unusually good. The book is beautifully printed and put together.

L. HASEMAN

Health Heroes. Edward Livingston Trudeau—*By Grace T. Hallock and C. E. Turner. New York: Heath,* 1929. 168 pp. Price, $1.12.

The outstanding characteristics of Trudeau, the beloved physician, were his altruism and optimism. These are traits which have marked most of the really great sanitarians. Like Trudeau, such leaders as Sedgwick, Reed, Gorgas, and Vaughan, were invariably gentle, courteous, considerate, and always thoughtful of others. These men were not lacking in force and determination, but they were fair, they were humane, and they seldom displayed those disagreeable qualities which sometimes impair the rest of us.

It is highly desirable that school children, especially those at the impressionable age of adolescence, should read about men with ideals such as those possessed by Trudeau.

This little book is written in a pleasing style, with a fine sympathetic appreciation of the friendly physician of Saranac, who lived an inspiring life of self sacrifice. There may be some stimulation in conflict, but after all, there is greater inspiration in a career which could produce the love, regard, and respect of all fellow-men. This book can be highly recommended for its purpose.

JAMES A. TOBEY

The Biological Basis of Human Nature—*By H. S. Jennings. New York: W. W. Norton and Co.*, 1930. 384 pp. 51 ill. Price, $4.00.

With modern reforms and reformers running rampant, each basing his gospel on partial information, there is need for an authoritative treatment of the subject of genetics which can be easily understood. Both aspects of this need have been very happily filled by Professor Jennings. His authority cannot be questioned, and his treatment leaves little to be desired.

In many ways he is very fortunate in his subject. Genetics can be made popular with few or none of the drastic popularizing expedients necessary in treating such subjects as relativity or quantum mechanics. The data are obtained by direct observation on systems furnished to order by nature, and the results can be formulated with the employment of a minimum of inference requiring anything like subtle deduction. Hence most laymen possessing the patience required to acquaint themselves with the available data should have no trouble in becoming oriented to a scientific genetic point of view.

Furthermore the appeal of this field is very general. The direct application of the results of genetic studies in the consideration of the problems of eugenics, of specific sociological reforms such as prison reform, of behaviorism, of the mechanism of evolution, of the ethics and philosophy of medicine, lends to it a general interest. In fact there seems a possible bearing even on such speculative ideas as reincarnation. The author has recognized these applications, and each type of evangel can find the bearing of genetics on his particular prejudice sympathetically but impersonally treated.

This type of treatment lends to the volume the character of a well coördinated series of essays. The bulk of each essay is in answer to a series of direct questions propounded by the author, the first essay, five chapters in length, laying the informational foundation in the science upon which subsequent discussions and applications are based.

Chapter IX deals with "Biological Fallacies and Human Affairs." In it there are listed and discussed some fourteen types of fallacy which may be implicit in the interpretation of experimental work of otherwise high enough caliber. While these are labelled biological fallacies and are all applicable in that field, there are only a few which are so restricted, and this one chapter might well be read with much profit by workers in any field of activity which employs a scientific method.

In the final chapter the author seems to descend from his general high level of treatment, and, in urging the acceptance of the doctrine of emergence as a methodological point of view for workers in biology, uses a type of reasoning which seems to smack of some of the same fallacies he has previously pointed out as underlying the conclusions of certain workers that acquired characters are inherited in the Lamarckian sense. His reason for this stand seems to be summed up in the statement that "the doctrine of emergent evolution is a declaration of independence for biology." The point of view of emergence seems, then, not so much a productive methodology as a desire for a psychic sense of autonomy in biology. The ease with which emergence permits *ad hoc* rationalizations of data, regardless of how complete the picture furnished by the data, would seem to be a high price to pay for such a psychic sense even were such an attitude necessary to the mental happiness of the worker and not justified by any other point of view. It is certainly questionable whether the welfare of biology is bound up in its independence.

The reviewer can conceive of no class

of thinking individuals, not even excluding geneticists, who would not find this volume of extreme interest.

ALLEN E. STEARN

A Textbook of Physiology for Nurses—*By W. G. Christian, M.D., and C. C. Haskell, M.D. St. Louis: Mosby,* 1929. 153 pp. Price, $2.00.

The authors of this volume have treated physiology in a very elementary manner, and in so doing they have made many unavoidably ambiguous statements. The subject matter is not new, as stated in the introduction, but merely condensed and simplified from authentic textbooks.

A book of this type will not fit into the already overcrowded curriculum of the nurses' training schools. The book is not complete enough to meet the requirements of an adequate physiology course. The present trend is to combine anatomy and physiology into one course. In this combination the nurse is given the fundamental knowledge of the two subjects, first, by studying the anatomical structure, and second, by associating the physiology or function of the structure in the body.

Nurses entering training schools for the most part are without previous training in chemistry, which excludes from their comprehension many of the good points of this book. A good textbook of anatomy and physiology includes a greater part of the elementary physiology than this book has to offer.

HOWARD C. COGGESHALL

The Health Care of the Baby—*By Louis Fischer, M.D. New York: Funk & Wagnalls,* 1930. 248 pp. Price, $1.00.

This is a very practical handbook for mothers in which the advice for feeding, first aid, and "what to do until the doctor comes" is presented in simple language. There are also a number of good recipes.

The chapter on Bad Habits is the weakest in the book. The author is apparently unaware of the recent literature on this subject. This difficulty might easily be offset by supplementing the book with publications on sex and mental hygiene from the Children's Bureau at Washington. DAVID M. LEVY

A Health Revue—A Pageant of Health Activities and Rules Adapted for Junior High Schools—*By Margaret Strassler. Introduction by T. M. Muir. New York: Barnes,* 1930. 75 pp. Price, $1.50.

It is the execution rather than the idea that makes *A Health Revue* a novel and useful addition to the literature on entertainment as a form of health education.

Milk bottles have chased coffee pots before. Queens and courtiers have long given audience to personified carrots and apples. Tooth brush drills are commonplace. However, this revue in which the familiar ten rules of personal hygiene for boys and girls are made a part of a colorful pageant was produced on a grand scale. The household arts department, physical education and arts all worked hard on its preparation. The performance must have been a finished piece of stagecraft. A careful record is set down in this book written by Margaret Strassler. Pictures, diagrams and exact instructions cover every detail so that a junior high school health education department in any part of the country should be able to reproduce faithfully the 3′ x 5′ cake of soap, the Egyptian dance, the drills, the stage lighting and the costumes.

MARY SWAIN ROUTZAHN

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH. D.

Typhoid Fever Rates—The annual summary of typhoid fever rates of the country evidences again the continued decline of this disease.

ANON. Typhoid in the Large Cities of the United States in 1929. J. A. M. A., 94, 20: 1574 (May 17), 1930.

Infant Deaths and Health Expenditures—No demonstrable relationship was found between infant mortality rates and per capita official expenditures for various health services in the statistics included in this study.

BOLT, R. A. Municipal Expenditures for Public Health in Cities of the United States of 70,000 Population and Over for the Year 1923 in Relation to Their Infant Mortality Rates. Am. J. Hyg., 11, 3: 601 (May), 1930.

Diphtheria Immunization with Toxoid—"Toxoid should be given without preliminary testing only to children under 6 years. . . . The dilute toxoid reaction test was given to all school children." The paper is well worth reading by all sanitarians having to do with this subject, and who hasn't?

BURKE, F. S. The Administrative Control of the Diphtheria Toxoid Campaign in Toronto. Canad. Pub. Health J., 21, 5: 209 (May), 1930.

Measuring Residual Chlorine—An apparatus is described which measures the residual chlorine in treated water supplies. A photo-electric cell records the degree of the color when orthotolidin is added to fresh samples of chlorinated water.

CUTLER, J. W., and GREEN, F. W. Operating Experiences with a New Automatic Residual Chlorine Recorder and Controller. J. Am. Water Works Assn., 22, 6: 755 (June), 1930.

Noise—Do you want to measure the noise in your town? This paper tells you how, and further, tells you what noise does to you.

DENNIS, E. B., JR. Noise—Its Measurement, Effect and Control. New York State J. Med., 30, 10: 573 (May 15), 1930.

Cod Liver Oil and Viosterol—Another report of a study which leads to the conclusion that viosterol in the recommended dosages is less effective than cod liver oil in the prevention of rickets. Perhaps rickets is not due to a deficiency of Vitamin D alone.

DESANCTIS, A. G., and CRAIG, J. D. Comparative Value of Viosterol and Cod Liver Oil as Prophylactic Antirachitic Agents. J. A. M. A., 94, 17: 1285 (Apr. 26), 1930.

Philippine Vaccination History—The ups and downs of compulsory vaccination through periods of American and native law enforcement furnishes a striking story to refute the anti-vaccinist allegations. Good ammunition.

HITCHINS, A. P. Smallpox. Pub. Health (Mich.), 18, 4: 75 (Apr.), 1930.

Smallpox Vaccination—A frank discussion of the disadvantages of vaccination and a detailed account of good technic. The immunization of infants is stressed.

LEAKE, J. P. Vaccination. New Eng. J. Med., 202, 20: (May 15), 1930.

Rural Health Administration—The map showing the present status of full-time rural health units will encourage sanitarians who have watched the march of this great project. The total is 505 counties in 35 states.

LUMSDEN, L. L. Extent of Rural Health Service in the United States, 1926-1930. Pub. Health Rep., 45, 19: 1057 (May 9), 1930.

Prenatal Clinics in Scotland—This detailed account of the routine employed

for several years in Glasgow will prove interesting to American child hygienists.

MACCUNN, M. P., and WYLIE, M. E. Ante-Natal Care. Med. Off., 43, 19: 209 (May 10), 1930.

Vitamin B Source—Wheat germ as a source of vitamin B proved to be a potent growth promoting factor when fed to undernourished children. Rolls made of 50 per cent germ and 50 per cent white flour were used as the dietetic medium.

MORGAN, A. F., and BARRY, M. M. Underweight Children. Am. J. Dis. Child., 39, 5: 935 (May), 1930.

Immunization Against Disease—A straightforward, absorbing, lucid story of what is known about the prophylaxis of the several communicable diseases. An outstanding example of a talk for laymen.

PARK, W. H. Serums and Vaccines in Infectious Disease Prevention. Child H. Bull., 6, 3: 73 (May), 1930.

School Children's Hearing—"In no group, at any age, when both sexes were taken together, did the rate of children with significant hearing loss rise as high as 4 per cent." This is one of the conclusions on this experience with the audiometer.

STERLING, F. B., and BELL, E. Hearing of School Children as Measured by the Audiometer and as Related to School Work. Pub. Health Rep., 45, 20: 1117 (May 16), 1930.

Cancer Research—What research has done and hopes to do in finding the cause and cure for cancer is told simply and well. The paper prepared for nurses will interest all sanitarians even though it contains little that is very new.

WOGLOM, W. H. Cancer as We Know It. Am. J. Nurs., 30, 5: 543 (May), 1930.

Cancer and Mineral Oils—Liquid petrolatum painted on skin of, and fed to, susceptible albino mice produced no cancer. No evidence was found to indicate any danger in the therapeutic use of mineral oils.

WOOD, F. C. The Non-carcinogenic Nature of Purified Mineral Oil. J. A. M. A., 94, 21: 1641 (May 24), 1930.

HEALTH DEPARTMENT AND OTHER REPORTS

IRA V. HISCOCK

Sweden—Report of Official Committee on Maternity Welfare Work—The committee of experts appointed by the Social Welfare Department of Sweden in 1926 for the study of maternity-welfare measures issued its report at the end of 1929.

Although acknowledging that maternity welfare work is well developed in Sweden, the committee pointed out the need for improvement. In addition to educational measures of various kinds, better medical care and financial aid were recommended for the expectant mother, the woman in confinement, and the young mother caring for her child.

To improve the medical care, the committee suggests an increase in the facilities for medical examination of and advice to expectant mothers and mothers of young babies. Such examinations are given now only in some cities, but they should be given more generally and more regularly. In smaller communities this work can be performed by the midwives in public service * but in towns and cities there should be a separate organ, a "bureau for the protection of mothers and children." In the opinion of the committee, some of the existing child welfare agencies could take over this function. For the examinations and advice the midwife should be paid one-half by the mother, the other half by public funds. For the supervision of the care of new-born children, the committee advises the enlistment of the services of the public health officers, the midwives to report the cases of childbirth to the officers who would supervise the new-born infants in their districts.

The committee recommends an increase in the number of beds for maternity cases and the establishment of special maternity hospitals which are to be aided financially by the State, also an increase in the number of homes where expectant mothers unable to work and mothers with infants can find shelter. There is also need for a larger number of visiting housekeepers.

As to the financial aid to mothers, two laws are proposed. One law provides for maternity benefits of 50 kronor (about $13.40) to be paid on application to women whose income is below a certain specified amount. In such cases midwife service is also to be given. The other proposed law provides a maternity benefit equal to two-thirds of the wages of women in certain occupations to compensate them for the loss of earnings caused by the law prohibiting the employment of women in those occupations for 6 weeks after childbirth. The committee recommends that most of the expenses be met by the State. It also urges close coöperation between the various child welfare agencies.—*Sociala Meddelanden*, Stockholm, 12: 986, 1929.

Let There Be Sight—That an annual report may be attractive, interesting, and enlightening is demonstrated by the National Society for the Prevention of Blindness in its 15th annual record for 1929. An unusually attractive cover arouses interest and prompts one to look inside. Here one finds an excellent photograph of a boy and girl over the caption Healthy, Happy Eyes of Childhood. The table of contents, under the title of the report Let There Be Sight, carries the following section headings: Through Preventing Eye Troubles in Babies; Caring for the Eyes of Preschool Children; Conserving the Sight of School Children; Conserving the Sight of the Worker; Research and

* In many communities of Sweden midwives are employed by the local government on a salary in order to assure their presence; in addition the patients also pay a certain fee.

Demonstration Projects; Public Education; Coöperation with Other Agencies; Financial Support.

The report is well printed in good type, on paper well adapted to the use of excellent photographs and diagrams which illustrate material in the descriptive text. The incidence of ophthalmia neonatorum in new pupils in schools for the blind for the year 1929 was reported by the American Foundation for the Blind to be 9.5 per cent, a reduction of such incidence to the extent of more than two-thirds in the past 21 years. The importance of effecting the cure of syphilis in the expectant mother or in the father in order to prevent a large percentage of blindness is being increasingly realized by the National Society and by agencies interested in the prevention and cure of venereal disease.

Studies of eyes of preschool children are reported as showing that of 982 tested, 21 per cent had some abnormal condition of the eye. During the year, 92 communities in 12 states and Canada were given demonstrations and general talks on prevention of blindness. The organization of sight-saving classes in schools is described. Specific projects to aid the worker are outlined, as well as research and demonstration projects. The National Society educational campaign included the circulation of about 725,000 pieces of literature, extensive use of charts and exhibits, and 307 lectures which reached an aggregate audience of some 45,000 people.

Copies may be secured upon application to the Society, 370 Seventh Ave., New York, N. Y.

Lincoln, Neb.—The 1929 report shows a per capita expenditure by the Health Department of 68 cents. A birth rate of 18.6 and a death rate of 12.9 are recorded. A marked increase in the number of prenatal patients cared for in the General Clinic of the Health Department is noted. Eighteen hundred and fifty-four visits were made during the year to the clinic.

The daily average amount of milk sold in the city was 0.82 pint per capita, based on a population of 70,000. There were 1,189 inspections made of milk plants, 12 of creameries, 194 of ice cream plants, and 939 of dairy farms.

Colorado Springs, Colo.—A total of $27,013 was expended in 1929 by the Colorado Springs Department of Health and Sanitation, which, on an estimate of a population of 36,000, is $.75 per capita. Sixteen per cent of the budget was for general salaries, 18.5 per cent for medical work for school children, and approximately 10 per cent each for milk control, sanitary work, and communicable disease control. The resident death rate was 14.2 per 1,000, which is lowered to 11.9 when deaths due to tuberculosis contracted elsewhere are excluded. Four typhoid fever deaths were the result of an epidemic of 37 cases due to a raw milk supply.

The report of 39 pages contains several illustrations of Colorado Springs scenery, which tends to fulfil for the interior the promising impression made by an attractive red cover.

Ottawa, Can.—Ottawa's outstanding public health occurrence of 1929 was an epidemic of poliomyelitis. The first reported case appeared July 28 in the western part of the city, followed by 3 other cases within the week. The following week 7 were reported, and the week after 1, which indicated a decline in incidence. However, the fourth week showed 16 cases and was followed by 11 to 25 cases per week until late in October. In all, 176 cases were reported with 3 deaths. The age of the patients ranged from 7 months to 25 years, averaging 7.4 years. In only 4 instances were 2 cases reported from the same premises.

As the outbreak was not entirely un-

expected, the health department had prepared a partial list of donors in case of need. Convalescent serum was thus immediately in hand, but in limited amount. This was later supplemented by advertising in the local papers. Daily press articles, the circularizing of physicians, and the calling of a Medical Society meeting formed the publicity, and to improve early diagnosis and reporting, a necessity if the serum treatment was to be successful. In all, 141 cases, or 80 per cent, were hospitalized. Of these, 26 had paralysis on admission. Of the remaining 115 cases, which were given serum treatment, 109, or 95 per cent, recovered completely, 5, or 4.3 per cent, recovered with paralysis, and 1 died. During the first 4 weeks of the epidemic, 23 cases were hospitalized; of these, 17 had terminal paralysis (14 on admission). Of the subsequent 118 cases, 8 had paralysis on admission.

The general death rate from all causes of death for the year was 14.1 per 1,000. The birth rate is the lowest recorded. Infant mortality (118.6) was higher than in 1928, due chiefly to respiratory diseases. The tuberculosis rate was low, 59.9 per 100,000 population. Chicken pox and measles were prevalent during the year.

Greenwich, Conn.—The health officer's report for 1929 is contained in the town report and outlines in a comprehensive manner the health program of this community. This report is of more than usual interest because it traces the history of the health department, and of health legislation, and indicates the important place which public health occupies as an official governmental function. The expenditures by the Board of Health last year amounted to $56,699, while receipts totalled $773.

There are 4 health stations under the department where prenatal, infant and preschool conferences are held. Greenwich has a Department of Public Health Nursing with a supervisor under whom all the public health nurses in town, including school nurses, function.

New Jersey Sanatoriums—A comprehensive study has been made of tuberculosis patients in New Jersey sanatoriums by the State Department of Institutions and Agencies. In the 25-year period 1904–1929, the death rate from tuberculosis in New Jersey has dropped from 179.5 per 100,000 in 1904 to 74.9 in 1929. Most of the sanatoriums of the counties have been built during the last 20 years and are continually increasing their capacities. Preventoriums during the last few years have proved their part in the declining rate by curing children who have been contact cases and who may have a slight trace of tuberculosis. The important part played by state and county tuberculosis leagues and clinics is indicated.

The 5,204 new cases reported to the State Board of Health in 1929 and the 2,917 deaths, together with the 20,000 active cases of tuberculosis on record in the files of the state department, indicate that here as elsewhere are problems still to be solved. Forty-two per cent of the patients entering sanatoriums for the first time are between the ages 15 and 29, and 15 per cent of the females entering are between 15 and 19 years of age. During last year, 41 per cent of the pulmonary cases entered in the far advanced stage, with the same proportion moderately advanced, and 18 per cent in the minimal stages of the disease. Of the patients in sanatoriums, 15 per cent of those discharged remained less than 1 month, 27 per cent less than 2 months, and 38 per cent less than 3 months.

There are 11 county and 1 state sanatoriums. A new children's unit of 114 beds provides preventorium care for children 5 years of age or over, and increases the capacity at Glen Gardner to 377. A 50 per cent increase in the

number of persons in state and county sanatoriums from 32 to 48 per 100,000 population has occurred during the past 10 years. The actual numbers have risen from 996 to 1,887. This means, in view of the decreasing death rate, that better facilities for discovery and treatment have been provided. Tables are presented to show as arrested, apparently arrested, or quiescent, 51 per cent of those discharged who entered with minimal tuberculosis, as contrasted with 31 per cent discharged of those entering with moderately advanced tuberculosis, and only 16 per cent discharged of those entering with far advanced tuberculosis.

Detroit, Mich.—"Personal Health is Public Wealth," is the title of Detroit's 1929 report published in the January, 1930, *Bulletin* of the Department of Health. Detroit's population growth from 465,766 in 1910 to 1,429,200 in 1929 is shown at the outset in tabular form by years. Many excellent charts and statistical tables add interest to this comprehensive report of 68 pages. The last page shows in a table the distribution of the Department of Health personnel of 727 members, exclusive of the 925 employees in the city hospital and the sanatorium, and the 22 sanitary police, on the police pay roll.

A unique and carefully worked out plan of diphtheria prevention is described. In 1928 it was felt that diphtheria prevention had been demonstrated over a sufficient period of time for the majority of people to have confidence in it. Hence, the work was in November, 1928, turned over to the practicing physicians of the city according to a plan worked out by the Public Health Committee of the County Medical Society and the Department of Health and approved by the County Medical Society.

Weekly meetings were held during the year by the Public Health Committee of the Medical Society, at which time representatives of the Department of Health discussed with the committee points of mutual interest and devised plans for meeting specific problems. An immune serum clinic was developed, where blood was taken from donors who had within one year recovered from scarlet fever, measles, poliomyelitis, meningitis, whooping cough, chicken pox and mumps and the immune serum was prepared for distribution to physicians.

The principal causes of death were heart disease (13.6 deaths per 100,000 population), pneumonia (10.3), tuberculosis (8.0), violence (7.6), early infancy (7.2), and cancer (6.8). A birth rate of 23.5 and an infant mortality rate of 69.4 are noted.

In connection with school health work, the Department of Health, through its staff of school physicians and nurses, attempts to see to it that parents and children alike are properly instructed so as to avail themselves of the help of their own physicians and dentists for these services.

An effort was made to evaluate the work in elementary grades. Examinations of all children in all secondary schools showed that while of all 1st grade children there were 69.7 per cent with defects, in the intermediate group the figure dropped to 46.8 per cent, and in the high schools, to 39 per cent. A health counsellor program was set up by the Board of Education in certain schools under the supervision of a full-time head, who was charged with the guidance of the individual and with the arrangement of the activities of the school itself to help meet the needs of the child.

Newport, R. I.—Newport, R. I., had an estimated population in 1929 of 30,600. The per capita expenditure for health was 71 cents. The staff of the Board of Health consists of a commissioner, clerk, bacteriologist, milk and

sanitary and food inspectors, a school nurse, a part-time oculist and aurist, a part-time chief, 2 assistant dental inspectors, and 4 part-time medical school inspectors. Of 5,539 pupils examined, 617 were found with defects in vision and 149 in hearing. There were 536 pupils registered in the dental clinic, of which 235 received prophylactic treatments and 221 were referred to other dentists. The school nurse made 1,605 visits, as well as assisting in the Dental Clinic and in the eyesight and hearing examinations and with the Schick tests and treatments in the schools and at the office.

For 11 full years regulations have been enforced permitting the sale of but two classes of milk—certified and pasteurized. This condition has doubtless been a factor in placing Newport among the low infant mortality cities of the country, the 1929 estimated rate being 38.7 per 1,000 births. Only 21 infant deaths from gastroenteric disorders have been reported in the 11 years since enforcement, as against 118 in the 11 previous years.

BOOKS RECEIVED

ELEMENTARY MATERIA MEDICA, INCLUDING DRUGS AND SOLUTIONS. A Text-Book for Students of Nursing. Philadelphia: Saunders, 1929. 278 pp. Price, $1.75.

A SYSTEM OF BACTERIOLOGY IN RELATION TO MEDICINE. Vol. II. Various authors. London: His Majesty's Stationery Office, 1929. 420 pp. Price, $6.00.

INDUSTRIAL HYGIENE FOR SCHOOLS. By Jesse F. Williams and Delbert Oberteuffer. New York: McGraw-Hill, 1930. 280 pp. Price, $2.00.

THE NEW EVOLUTION—ZOÖGENESIS. By Austin H. Clark. Baltimore: Williams & Wilkins, 1930. 297 pp. Price, $3.00.

NURSING IN EYE, EAR, NOSE AND THROAT DISEASES. By A. Edward Davis and Beaman Douglass. (3d ed. rev.) Philadelphia: Davis, 1930. 373 pp. Price, $2.50.

THE MATERIALS OF LIFE. By T. R. Parsons. New York: Norton, 1930. 288 pp. Price, $3.00.

THE SCIENCE OF BIOLOGY. An Introductory Study. By Geo. G. Scott. (Revised and reset.) New York: Crowell, 1930. 633 pp. Price, $3.75.

THE BASIS OF EPILEPSY. By Edward A. Tracy. Boston: Badger, 1930. 92 pp. Price, $2.00.

HOME NURSING AND CHILD CARE. By C. E. Turner, Nell Josephine Morgan and Georgie B. Collins. New York: Heath, 1930. 282 pp. Price, $1.20.

IMPROVE YOUR MEMORY. By Bertrand Lyon. Boston: Lothrop, Lee & Shepard, 1930. 252 pp. Price, $2.50.

CHILDREN AT THE CROSSROADS. By Agnes E. Benedict. New York: Commonwealth Fund, 1930. 238 pp. Price, $1.50.

ESSENTIALS OF PEDIATRIC NURSING. By Ruth Alice Perkins. Philadelphia: Davis, 1930. 364 pp. Price, $2.75.

A STUDY GUIDE TEXT-BOOK IN THE PRINCIPLES AND PRACTICE OF NURSING. By Lulu K. Wolf. New York: Macmillan, 1930. 139 pp. Price, $.70.

PRACTICAL PREVENCEPTION OR THE TECHNIQUE OF BIRTH CONTROL. By William J. Robinson. Hoboken: American Biological Society, 1929. 170 pp. Price, $3.15.

INFANT NUTRITION. A TEXTBOOK ON INFANT FEEDING FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By W. McKim Marriott. St. Louis: Mosby, 1930. 375 pp. Price, $5.50.

IS IT SAFE TO WORK? A STUDY OF INDUSTRIAL ACCIDENTS. By Edison L. Bowers. New York: Houghton Mifflin, 1930. 239 pp. Price, $2.50.

SCIENCE IN THE SERVICE OF HEALTH. By Elliott R. Downing. New York: Longmans, Green, 1930. 320 pp. Price, $2.00.

NEWS FROM THE FIELD

HOSPITAL ASSOCIATION MEETING IN NEW ORLEANS

THE American Protestant Hospital Association will convene in New Orleans on October 17, 1930, and will continue in session until October 20, 1930, when the preliminary meetings of the American Hospital Association will begin. They will continue through October 24. The American Occupational Therapy Association, the Hospital Social Workers' Association and the Association of Children's Hospitals will hold their meetings at the same time.

The American Public Health Association meets at Fort Worth, Texas, the following week.

INFANT MORTALITY RATE HIGHEST IN WASHINGTON

THE National capital has the highest infant death rate in the country—19.2 per 1,000 under 1 day old, as compared with an average of 15 per 1,000—according to Drs. Leon S. Gordon and Oscar B. Hunter, Washington.

They made this statement before the District Medical Society on May 7.

CLEVELAND ACADEMY OF MEDICINE

THE Academy has embarked upon a career of editorship of a health column in the Cleveland Press. For several years the Committee on Health Education has discussed with the Cleveland newspapers the possibility of furnishing such a column. As an experiment the *Cleveland Press* accepted a series of brief articles on general health subjects now appearing under the heading "Your Health Today" on Mondays, Wednesdays and Fridays.

The column is being supplied by the Committee on Health Education and H. Van Y. Caldwell, executive secretary. Dr. S. C. Lind has been named as consulting editor, and will work with Mr. Caldwell on the revision of all material submitted.

The members of the committee are: Drs. Lester Taylor, Chairman, R. A. Bolt, A. B. Denison, C. G. LaRocco, S. C. Lind, E. A. Peterson, H. D. Piercy and H. L. Rockwood.

CANADIAN PEOPLE VALUED AT $175,000,000,000

VALUATION of the Canadian people as human beings at $175,000,000,000 was made before a joint meeting of the Canadian Public Health Association and Ontario health officers by R. H. Roats, Dominion statistician. He explained the basis of the estimate by giving the figures of value in the case of a man able to earn $2,500 a year at the height of his working ability.

At birth, he said, such a man is worth $9,000; at 15 years, $25,000, and at 25 years, $32,000. Value of the female life, he said, was half as much.

"That," he explained, "is the capital value of the asset. It is your professional duty to maintain it at its maximum of efficiency and dividend earning capacity."

PHILIPPINE UNIVERSITY RECEIVES $150,000 GIFT

A GIFT of $150,000 by the Rockefeller Foundation to the University of the Philippines, a State-owned institution in Manila, has been announced by Eugene A. Gilmore, Vice-Governor-General of the Philippine Islands. The fund is for the construction of a building to house the university's graduate school of hygiene and public health.

Mr. Gilmore said the gift was made on condition that the university provide a suitable site and yearly operating budget of $40,000. These conditions, he said, have been met and the money has been given.

INTERNATIONAL ASSOCIATION OF MILK DEALERS

ONE hundred and thirty laboratory directors and workers from the East assembled at Geneva (N. Y.) Agricultural Experiment Station on April 29 to participate in an intensive two-day laboratory clinic.

One of the most interesting discussions was on recent research and discoveries in dairy chemistry with special reference to the caseins of milk. Dr. D. C. Carpenter of the Station led the discussion. He has recently done outstanding work in coöperation with Dr. Svedberg of Sweden.

Dr. R. S. Breed and Dr. A. C. Dahlberg outlined the work that is now in progress at Geneva.

Among the interesting papers was one by A. J. Powers of Borden Company, which discussed standard plate methods. It was shown that sample bottles, sampling procedure and plating technic were not entirely standard although standard ingredients for media had solved numerous media problems.

SANITARY SURVEY OF TEXAS STORM AREA

ON May 6, a number of storms developed over Texas with cyclonic intensity. Much damage was done, particularly in a 20-mile strip of 200 yards width, southwest of San Antonio and in similar areas in Central Texas. The City of Frost suffered the worst. This city has a population of 1,100. About 60 of the 200 homes were destroyed.

In all there were 65 deaths, 22 of them being in Frost, and many were injured. A hurried review revealed that the water supply with its sources from a deep well was considered of satisfactory quality. With no power the pumps were out of commission; this with the broken taps soon emptied the reservoir. Power was restored in 24 hours but pressure could not be maintained because of broken connections. Plumbers were rushed to the locality; samples were tested daily; apparatus for emergency supply of chlorine was made available; and instructions were issued to boil all water.

Because of broken connections, and lack of running water, sewage disposal was considerably retarded, but temporary latrines in the form of pit toilets were installed to take care of the large number of workmen needed in reconstruction, and until regular service could be restored.

Temporary canteens were established with special sanitary inspectors to supervise sanitary measures.

The State Department of Highways took care of the cleaning of streets and disposal of refuse, dead stock, etc.

A temporary clinic was opened under the direction of local health officers with the assistance of the State Health Department and the Red Cross.

Several other areas were reached as quickly as possible with precautionary measures, and instructions were published in all newspapers on the prevention of diseases arising from the storm. —E. G. Eggert, Sanitary Engineer in Charge.

NEW JERSEY INDUSTRIAL NURSES

THE Industrial Nurses Club of New Jersey met on May 19 in Newark, N. J. There was a dinner after which there was a round table discussion.

NEW LABORATORY CAR

THE Southern Pacific car mentioned in the June *Journal* should have as its personnel a laboratory technician, a doctor, and probably a dentist. The car is of regulation Pullman length and

is beautiful in its interior appointments, being of rather extraordinary mahogany. It has two staterooms with bath between, a compartment, and two compartments for the crew of two, the cook and porter, with their bath and toilet. The car is intended to do periodical physical examinations, especially in inaccessible parts of the Southern Pacific system and endeavor to sell the idea to their men and for their families as well. It will be equipped with movies of an educational type on all subjects of preventive medicine. It will also be equipped with movies for the medical staff of the railroad and it is expected not only to do periodical examinations but will offer immunization against disease for both employees and their families. It has a complete X-ray equipment with its own unit of batteries and gasoline engine. There is a completely equipped darkroom and bacteriological and chemical laboratory. The car will be available for any epidemiological work, especially at the time of any epidemic. There are an observation platform, an observation waiting room which can be turned into a dining room en route, and an examining room for various types of examinations.—Dr. J. C. Geiger (see also *A. J. P. H.*, June, 1930, p. 694).

FELLOWSHIPS IN MEDICINE

THE issue of the *Journal of the Association of American Medical Colleges* for January, 1930, contains a list of fellowships, funds and prizes available for graduate work in the United States and Canada. A reprint, which has been made available by the Editor of this *Journal*, should prove of interest to health administrators who are in search of a list of available fellowships.

A NEW FOUNDATION

THE Josiah Macy, Jr., Foundation, incorporated in New York State and established through an initial gift of five million dollars from Mrs. Walter G. Ladd in memory of her father, will devote its income to the support of studies of fundamental aspects of "health, sickness and methods for the relief of suffering."

It will offer aid in form of scholarships, awards, publications and financial grants to promote coöperation with unified aims between universities, colleges, hospitals, laboratories, learned societies and other undertakings of social usefulness.

THE HEALTH LIBRARY OF THE CITY HALL

THIRTY books on various phases of public health which ought to form the nucleus of a health library in every city hall are described in some detail in an article in the 1930 *Municipal Index*, published by the *American City Magazine* of New York. This useful bibliography has been prepared by Dr. R. S. Patterson, who edits the "Selected Public Health Bibliography" in the *American Journal of Public Health*, and by Dr. James A. Tobey, who is contributing public health editor of the *American City Magazine*. Health officers will find the suggestions in this article of great value.

MATERNITY AND CHILD WELFARE

THE National Conference on Maternity and Child Welfare will be held at the Friends' House, Euston Road, London, on July 1, 2 and 3.

The Presidential Address will be delivered by Susan Lawrence, M.P., Parliamentary Secretary to the Minister of Health. This is the first time since the series of Conferences was inaugurated in 1906 that a woman has played this important, but very appropriate, rôle. Among the Chairmen of the various sessions will be: Sir Arthur Stanley, The Lady Lawrence and Neville Chamberlain.

PERSONALS

DR. C. V. MERRITT, for a number of years Health Officer of Flint, Mich., died recently and has been succeeded by Dr. C. J. Scavarda.

DR. JOHN SUNDWALL, Director of the Department of Hygiene and Public Health of the University of Michigan, will teach at the University of California during the summer session.

DR. J. J. DURRETT, who resigned his position as chief of drug control, Food and Drug Administration, U. S. Department of Agriculture, to become State Health Officer of Alabama, has returned to the former position.

W. C. RUCKER, M.D., of the U. S. Public Health Service, New Orleans, died on May 22.

FRED N. JOHNSON has been named sanitary officer of Cumberland County, Tenn., to succeed W. H. Wright, who recently resigned.

E. C. STOY, of the U. S. Public Health Service, who has been assigned to work in Tennessee for the past several years, has gone to Florida, where he will work in connection with the Florida State Board of Health.

DR. MORRIS MASLON was recently reappointed to the Glens Falls (N. Y.) Board of Health.

DR. NATHAN M. SPECTOR has been appointed Health Officer of Willimantic, Conn.

DR. WALTER P. MCGRATH has been elected as Health Officer of Menasha, Wis.

DR. GUSTAV J. HILDEBRAND has been elected Health Officer of Sheboygan, Wis.

DR. WILLIAM B. HARRISON has resigned his position as Health Officer of Shelby County, Tenn., and is now affiliated with the Tennessee State Department of Health. Dr. Wallace P. Moore, formerly director of the division of epidemiology of the county health department, replaces Dr. Harrison as County Health Officer.

DR. E. G. SMITH, dental clinician, has been added to the staff of the Tennessee State Department of Public Health. Dr. Smith is in charge of the state dental program, and will make his headquarters for the present in Nashville. Later he is to be assigned to East Tennessee, with headquarters at Knoxville.

DR. L. M. COULTER was appointed Health Officer of Stanislaus County, Calif.

M. T. S. WRIGHT is City Health Officer of Dunsmuir, Calif. He succeeds John H. Young.

CONFERENCES

August 26–28, Eighth Texas Sanitarians Short School, held with Texas State Department of Health and the City of Amarillo, Amarillo, Tex.

September 8–12, American Congress of Physical Therapy, St. Louis, Mo.

September 29, week, National Safety Council, Chicago, Ill.

October 20–25, American Hospital Association, New Orleans, La.

October 11–19, National Dairy Exposition, St. Louis, Mo.

October 22–24, International Association of Dairy and Milk Inspectors, Cleveland, O.

October 27–30, American Public Health Association, Fort Worth, Tex.

FOREIGN

August 3–9, Second International Congress for Sex Research, London, England

August 4–9, International Veterinary Congress, London, England